



CAA-02-2015-1451 PART IIIC2h,4

# 1<sup>st</sup> Quarter, 2013 Relative Accuracy Test Audit

## Dutchess County Resource Recovery Facility Poughkeepsie, NY

*Prepared for*



**Covanta Hudson Valley  
Renewable Energy, LLC**

Poughkeepsie, NY

*Prepared by*



21 Griffin Road North  
Windsor, Connecticut 06095  
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Richard Kopacz  
Project Engineer

TRC Project No. 200414

March 2013

# REPORT CERTIFICATION

CONTINUOUS EMISSIONS MONITORING SYSTEM RELATIVE ACCURACY TEST AUDIT FOR  
COVANTA HUDSON VALLEY RENEWABLE ENERGY, LLC (FEBRUARY 20, 2013 AND FEBRUARY 21,  
2013)

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TRC was operating in conformance with the requirements of ASTM D7036-04 during this test program.

  
Jeffrey W. Burdette

TRC Air Measurements Technical Director

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I certify that to the best of my knowledge:

- Testing data and all corresponding information have been checked for accuracy and completeness.
- Sampling and analysis have been conducted in accordance with the approved protocol and applicable reference methods (as applicable).
- All deviations, method modifications, or sampling and analytical anomalies are summarized in the appropriate report narrative(s).
- Testing was conducted in conformance with the requirements of ASTM D7036-04 during this test program

  
Kirk Laakso

TRC On-Site QI

3-15-13  
Date

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I certify under penalty of law that I believe the information provided in this document is true, accurate, and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate, or incomplete information.

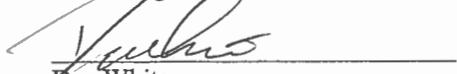
  
Richard Kopacz, QSTI

TRC Environmental Corporation

3 - 15 - 13  
Date

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I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate, or incomplete information.

  
Dan White

Environmental, Health and Safety Representative  
Covanta Hudson Valley Renewable Energy, LLC

3/18/13  
Date

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## **1.0 INTRODUCTION**

Covanta Hudson Valley Renewable Energy, LLC (Covanta) of Poughkeepsie, New York retained TRC Environmental Corporation (TRC) of Windsor, Connecticut to conduct a relative accuracy test audit (RATA) on four continuous emission monitoring (CEM) systems operated on two resource recovery units. The audits were conducted to demonstrate compliance with *40 CFR 60, Appendices B&F, Title V(#3-1345-00019/00013, issued by the New York State Department of Environmental Conservation (NYSDEC), and 40 CFR 60 Subpart BBBB regulations, "Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units Constructed on or before August 30, 1999".*

Each stack CEM unit consists of oxygen ( $O_2$ ), oxides of nitrogen ( $NO_x$ ), sulfur dioxide ( $SO_2$ ) and carbon monoxide (CO) analyzers. The inlet CEM units consist of  $SO_2$  analyzers. TRC conducted ten 21-minute sampling runs for Unit 1 and twelve 21-minute sampling runs for Unit 2 and compared the reference method data to the CEM data.

The testing was conducted on February 20, 2013 (Unit 1) and February 21 (Unit 2). Mr. Kirk Laakso of TRC conducted the emissions testing. Mr. Chuck Davis of Covanta collected pertinent process data and coordinated the test program. The program was not witnessed by the NYSDEC.

Section 2.0 of this document provides a summary and discussion of the RATA results. A brief discussion of the measurement methods and instrumentation is provided in Section 3. Quality assurance procedures are outlined in Section 4 and the appendices of this document provide the measurement documentation.

## **2.0 SUMMARY AND DISCUSSION OF RESULTS**

The results of the RATA tests from Unit 1 are provided in **Table 2-1** and the results from Unit 2 are provided in **Table 2-2**. Pollutant data is reported on a dry basis in parts per million ( $\text{ppm}_{\text{dry}}$ ) and diluent results are reported on a percent basis ( $\%_{\text{dry}}$ ). Oxides of nitrogen ( $\text{NO}_x$ ) and sulfur dioxide ( $\text{SO}_2$ ) data are also reported in parts per million, dry basis, corrected to 7% oxygen (ppm, dry@ 7%O<sub>2</sub>). Carbon monoxide (CO) data is reported in ppm, dry@ 7%O<sub>2</sub>. Relative accuracy (RA) for each analyzer was in compliance with the applicable regulation. During the relative accuracy testing the units were operating at greater than 50% capacity.

**Appendix A** contains all pertinent calibration data. A more detailed summary of TRC's sampling data is presented in **Appendices B and C**. The facility process data is presented in **Appendices D and E**.

### **Field Test Problems and Deviations**

There were no field test problems or deviations to the test program.

**Table 2-1**

Relative Accuracy Test Audit Summary  
Covanta Hudson Valley  
20-Feb-13

**Unit No. 1**

Parameters/Analyzer	O <sub>2</sub> %	NOx ppm@7%O <sub>2</sub>	SO <sub>2</sub> <sup>1</sup> ppm@7%O <sub>2</sub>	SO <sub>2</sub> DRE	CO <sup>2</sup> ppm@7%O <sub>2</sub>
Reference Method	3A	7E	6C	6C	10
Performance Specification	3	2	2	2	4
Emission Standard	NA	170	31	75	250
Average RM Value	11.7	104.4	0.1	99.8	26.5
Average CEMS Value	11.7	108.4	0.0	100.0	25.9
Relative Accuracy Standard	+/- 1%	20%	10%	20%	5%
Relative Accuracy		4.9		0.4	
Absolute Difference	-0.1				
Relative Accuracy Limit			1.0		1.5

<sup>1</sup> SO<sub>2</sub> Outlet relative accuracy is based on the calculation using the emission standard.

<sup>2</sup> CO low relative accuracy is based on the calculation using the emission standard.

**Table 2-2**

Relative Accuracy Test Audit Summary  
Covanta Hudson Valley  
21-Feb-13

**Unit No. 2**

Parameters/Analyzer	O <sub>2</sub> %	NOx ppm@7%O <sub>2</sub>	SO <sub>2</sub> ppm@7%O <sub>2</sub>	SO <sub>2</sub> DRE	CO ppm@7%O <sub>2</sub> Low
Reference Method	3A	7E	6C	6C	10
Performance Specification	3	2	2	2	4
Emission Standard	NA	170	31	75	250
Average RM Value	11.0	126.2	8.6	93.4	92.4
Average CEMS Value	11.0	137.0	8.8	93.2	94.6
Relative Accuracy Standard	+/- 1%	20%	20%	20%	10%
Relative Accuracy		9.6	11.2	1.0	8.8
Absolute Difference	0.0				
Relative Accuracy Limit					

### **3.0 PROCESS DESCRIPTION**

The RRF burns approximately 456 tons per day of municipal solid waste (MSW). The facility operates two identical combustor boilers, each consisting of Westinghouse-O'Connor water-walled cooled rotary combustor. From the boiler, the cooled gases enter the advanced air pollution control system. Using the lime slurry, the spray dry absorber (SDA) neutralizes acid-forming gases, such as sulfur oxides and hydrogen chloride. A dry activated carbon injection system has been installed for control of mercury and dioxin/furans. After the gas stream travels through these devices, particulate matter is removed by a reverse air fabric filter baghouse with ash removal hoppers. A schematic of the process is shown in **Figure 1**.

#### **3.1 CEM Equipment**

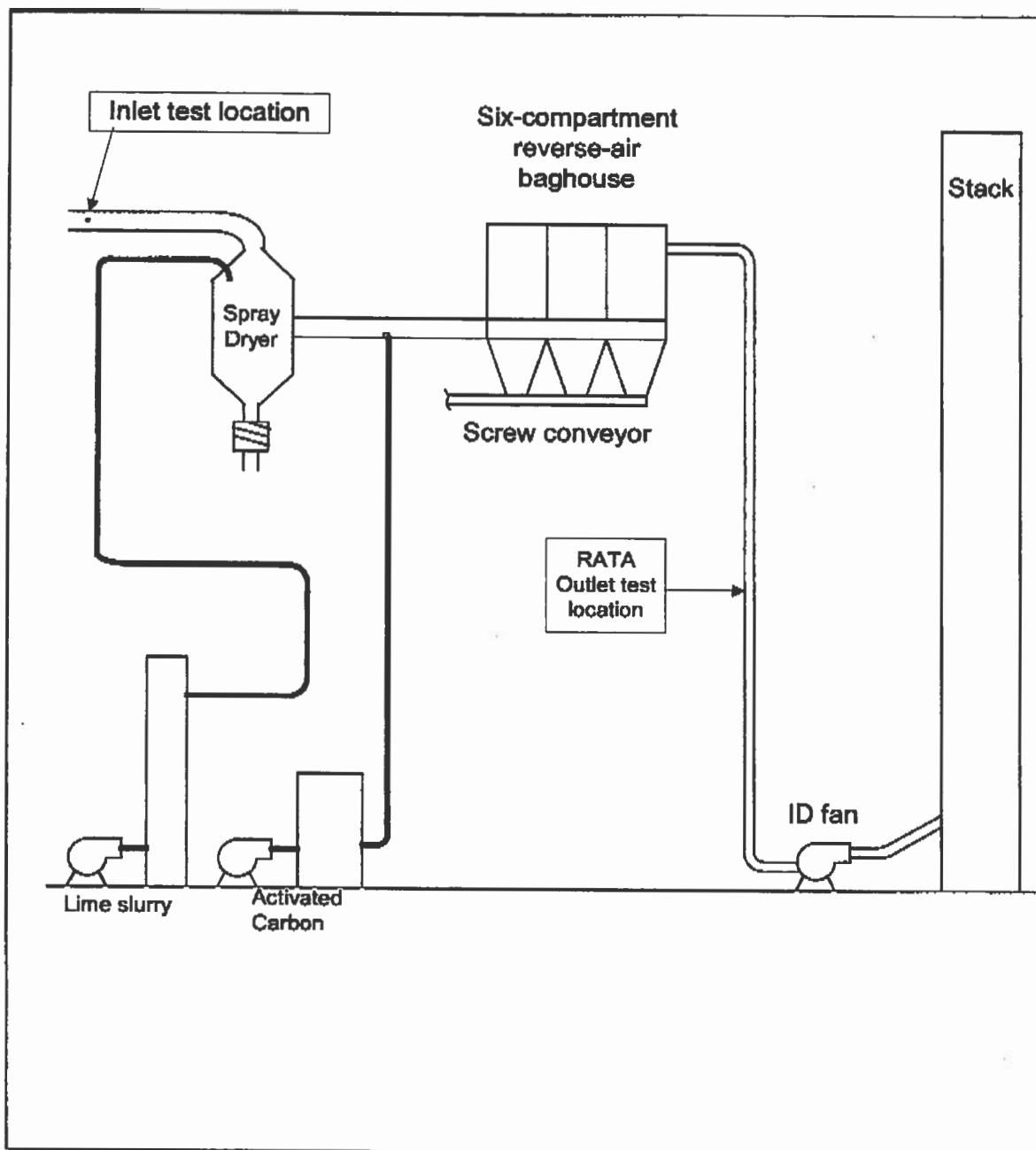
The inlet CEMS on both units consist of an extractive analyzer system for the measurement of SO<sub>2</sub> and O<sub>2</sub> emission concentrations on a dry basis. The SDA inlets each employ an Ametek O<sub>2</sub> (0-25 %) analyzer and a Rosemount SO<sub>2</sub> (0-500 ppm) analyzer.

The outlet CEMS on both units consist of an extractive MIR 9000 multi-gas analyzer system from Altech utilizes gas filter correlation infrared (GFCIR) technology for the measurement of CO, SO<sub>2</sub> and NOx emission concentrations in specific infrared ranges. A correlation wheel with gas and reference optical filters allows precise selective measurements of each gas, and eliminates cross sensitivity from other gases present. Reference and measurement signals from the infrared detector are utilized by a microprocessor to determine the actual gas concentrations. The oxygen sensor in the MIR9000 is a paramagnetic analyzer. The analyzers operate on ranges of 0-300 ppm SO<sub>2</sub>, 0-250 ppm NOx and 0-500 and 0-1000 ppm CO. The O<sub>2</sub> analyzer employs a paramagnetic sensor and operates on a range of 0-25 %.

All four analyzing points have an “SEC” box, which is a dry sampling probe that uses the permeation principle to remove moisture from the sample gas.

#### **3.2 Data Acquisition**

Data is processed and logged by a TRACE data acquisition system that logs data and creates reports through communications with three PLCs, one for each boiler in the CEMS shelter and the third floor in the control room.



## **4.0 SAMPLING AND ANALYTICAL METHODS**

### **4.1 Program Overview**

The field program was comprised of Reference Method testing in determining relative accuracy for the existing concentration CEMs. The gaseous measurements were conducted using real-time continuous pollutant monitors. All measurements were conducted in accordance with accepted EPA Reference Method procedures.

Gaseous pollutants ( $\text{SO}_2$ ,  $\text{NO}_x$ , CO, and  $\text{O}_2$ ) measurements were conducted in accordance with EPA Reference Methods 6C, 7E, 10, and 3A. The sampling procedures and sample runs were conducted in accordance with *40 CFR 60, Appendices B&F, Title V(#3-1345-00019/00013, issued by the New York State Department of Environmental Conservation (NYSDEC), and 40 CFR 60 Subpart BBBB regulations, "Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units Constructed on or before August 30, 1999"*.

Measurements for gaseous pollutants were conducted using three sample points on a traverse. Each point was sampled for seven minutes. The gaseous pollutant data is calculated on a dry basis for direct comparison to the facility CEMs output. All reference method data were recorded by a “CEMSoft” data logger calculating 1-minute and 21-minute averages.

### **4.2 Sample Port and Traverse Location**

Sampling was conducted from identical Unit Nos. 1 and 2 exhaust stacks. Three sample points were used to measure emissions of pollutant and diluent gases from the stack. The selection of sample points followed *40CFR60 Appendix B, Performance Specification 2, Section 3.2*. The exhaust sampling points are presented in **Table 4-1** and the Economizer sampling points are shown in **Table 4-2**. Schematic of the sampling locations are shown in **Appendix G**.

### **4.3 TRC Emission Monitoring System**

#### **4.3.1 Emissions Monitoring System Components**

Gaseous measurements were conducted at the facility with the use of TRC's Emissions Monitoring System. The system is a complete stand alone measurement trailer that houses the Reference Method instrumentation and the data acquisition system. TRC uses an extractive system for sample gas collection and measurement that measures concentrations on a dry basis. A schematic of the Emissions Monitoring System used by TRC is presented in **Appendix G**.

**Table 4-1**  
**Sample and Traverse Points for Gaseous Sampling**  
**RRF – Unit Nos. 1 & 2 Inlets**

Point	% of Stack Diameter	Point (inches)
1	16.7	9.4
2	50.0	28.0
3	83.3	46.6

**Table 4-2**  
**Sample and Traverse Points for Gaseous Sampling**  
**RRF – Unit Nos. 1 & 2 Outlets**

Point	% of Stack Diameter	Point (inches)
1	16.7	8.0
2	50.0	24.0
3	83.3	40.0

Table 4-3 presents a list of analyzers, which were used during this program.

**Table 4-3**  
**TRC Environmental Corporation**  
**Reference Method Instrumentation**

Parameter	Manufacture	Model Number	Measurement Range	Measurement Range
CO	TECO	48		193.6 ppm
SO <sub>2</sub>	Ametek	721AT2	0-452.3 ppm (In)	0-47.19 ppm
NO <sub>x</sub>	TECO	42H		0-452.6 ppm
O <sub>2</sub>	Servomex	1440	0-21.97 % (In)	0-21.97 %

### *Oxides of Nitrogen Measurements*

A Thermo Electron Corporations (TECO) Model 42H chemiluminescent NO/NO<sub>x</sub> monitor was used to measure NO<sub>x</sub>. The instrument operation is based on the principal of the chemiluminescent reaction of nitric oxide (NO) and ozone. Light emission results when electronically excited nitrogen dioxide (NO<sub>2</sub>) molecules revert to their ground state. To measure NO concentrations, the gas sample to be analyzed, is blended with ozone (O<sub>3</sub>) in the instrument's reaction chamber. The resulting chemiluminescence is monitored through an optical filter by a highly sensitive photomultiplier tube (PMT) positioned at one end of the reaction chamber. The filter/photomultiplier combination responds to light in a narrow wavelength band unique to this chemiluminescent reaction (detailed below) the filter assists in eliminates interferences in this wavelength:



To measure NO<sub>x</sub> concentrations (NO plus NO<sub>2</sub>), the sample gas flow is diverted through an NO<sub>2</sub>-to-NO converter. The chemiluminescent response in the reaction chamber to the converter effluent is linearly proportional to the NO<sub>x</sub> concentration entering the converter (sample gas). The system was operated in the NO<sub>x</sub> mode during all phases of the program.

### *Oxygen Measurements*

A Servomex O<sub>2</sub> analyzer was used to determine the concentration of O<sub>2</sub> in the stack gas. This instrument uses the paramagnetic principle, whereby the magnetic susceptibility of the gas volume is measured by the force acting on a nonmagnetic test body suspended in a magnetic field. The force is converted to an output current proportional to the O<sub>2</sub> concentration.

### *Carbon Monoxide Measurements*

A TECO Model 48 nondispersive infrared gas analyzer measured CO concentrations. The analyzer contains an infrared detector that uses the signal nondispersive beam technique with alternate modulations of the sample and reference cells. Radiation absorbed by CO in the sample cell results in a capacitance change in the detector, which is proportional to the CO concentration.

### **Sulfur Dioxide Measurements**

A Western Research model 721M microprocessor controlled fluorescent analyzer was to measure SO<sub>2</sub>. The instrument operates on the principle of fluorescence, by excitation of sulfur dioxide molecules by pulsing high intensity ultraviolet (UV) light. The resulting fluorescence is measured by a photo multiplier tube (PMT) sensitive in the near UV. The signal generated is an analog voltage linearly proportional to the sulfur dioxide concentration in the gas stream.

#### **4.3.2 Reference Method Monitoring System Calibrations**

Calibrations (zero and span) were performed using EPA Protocol 1 calibration gases at the beginning and end of each test period. Calibration gases are introduced to the system through a three-way tee at the back end of the probe.

#### **4.3.3 Data Reduction**

Using Equation 6C-1 (40CFR60, Appendix A), the ppm and percent values were corrected to account for the zero and span instrument drift as follows:

$$C_{gas} = (\bar{C} - C_o) \times \frac{C_{ma}}{C_m - C_o},$$

Where: C<sub>gas</sub> = emissions concentration (ppm or %)

̄C = average emissions reading (ppm or %)

C<sub>o</sub> = average zero reading (ppm or %)

C<sub>m</sub> = average span reading (ppm or %)

C<sub>ma</sub> = span gas concentration (ppm or %)

The relative accuracy (%RA) determinations are based on Equations 2-1 through 2-4 as presented in Specification 2 of 40CFR60, Appendix B. They are summarized as follows:

$$\% \text{RA} = \frac{|\bar{d}| + CI_{95}}{\text{avg reference method value}^1} \times 100$$

<sup>1</sup> The average reference method value or applicable emission standard.

Where:  $|\bar{d}|$  = Absolute value of the mean of differences,  $\frac{1}{n} \sum d_i$

Using Equation 2-3 (40CFR60, Appendix B, Performance Specification 2), the 95 percent confidence interval ( $CI_{95}$ ) is determined using the following equation:

$$CI_{95} = t_{0.975} \frac{S_d}{\sqrt{n}}$$

Where:  $t_{0.975}$  = student t distribution value at 2.5% upper tail area with n degrees of freedom

$S_d$  = standard deviation

n = number of samples

The standard deviation is calculated using Equation 2-2 (40CFR60, Appendix B, Performance Specification 2) as shown below:

$$S_d = \sqrt{\frac{\sum d_i^2 - \frac{(\sum d_i)^2}{n}}{n - 1}}$$

Where:  $\sum d_i^2$  = the algebraic sum of the squared individual measurements

$\sum(d_i^2)$  = the square of the algebraic sum of the individual measurements

The NO<sub>X</sub>, CO and SO<sub>2</sub> concentration rate (ppm @ 7% O<sub>2</sub>) is calculated using the following equation as shown below:

$$C_{dry} @ 7\% O_{2dry} = C_{dry} \frac{20.9 - 7}{20.9 - \% O_{2dry}}$$

Where:      C<sub>dry</sub>      =      Gas concentration, dry basis  
                %O<sub>2dry</sub>=      Percent oxygen, dry basis

## **5.0 QUALITY ASSURANCE**

The TRC quality assurance program (QA) is designed to ensure that emission measurement work is performed by qualified people using proper equipment following written procedures in order to provide accurate, defensible data. This program is based upon the EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III (EPA-600/4-77-027b).

At the beginning of each test day, a meeting was held to orient personnel to the activities scheduled for that day, to discuss results from the previous day, and to determine if any special considerations need to be addressed for the proposed work.

### **5.1 Measurement Methods**

Sampling and measurement equipment including continuous analyzers, recorders, pitot tubes, dry-gas meters, orifice meters, thermocouples, nozzles, and any other pertinent apparatus are uniquely identified, undergo preventive maintenance, and are calibrated before and after the test program. Most calibrations are performed with standards traceable to the National Institute for Standards and Technology (NIST) or other appropriate references. These standards include wet test meters and NIST Standard Reference Materials. Records of all calibration data are maintained within TRC files and will be made available to Covanta and on-site personnel prior to the first test period.

During the field tests, sampling performance and progress are continually evaluated, and deviations from sampling method criteria are reported to the Field Team Leader who then determines the validity of the test run. The Field Team Leader maintains a written log describing the events of each day.

### **5.2 Emission Monitoring System**

The system is calibrated, leak checked, and bias checked at the beginning and end of each emission test in accordance with 40 CFR Part 60, Methods 3A, 7E and 10. All calibration gases are Protocol 1 or equivalent ( $\pm 2\%$ ). Multi point calibrations are performed on the analyzers prior to the field program to establish linearity. During the data reduction process, all calculations are

reviewed by a person intimately associated with the emission test program, and finally by a senior scientist or engineer not associated with the program. These quality control checks provide a means to ensure that the calculations are performed correctly and that the data are reasonable.

## **APPENDIX A**

### **REFERENCE METHOD CALIBRATION DATA**



## CERTIFICATE OF ANALYSIS

NITROGEN - ULTRA HIGH PURITY-PURE

Airgas East, Inc.  
325 McCausland Court  
Cheshire, CT 06410  
(203) 250-6820  
(203) 250-6836 (FAX)

Part Number:	NI UHP15ABA	Reference Number:	37-116324636-3
Cylinder Analyzed:	XC016138B	Cylinder Volume:	143 Cubic Feet
Laboratory:	NEA - Cheshire - CT	Cylinder Pressure:	0 PSIG
Analysis Date:	Oct 09, 2012	Valve Outlet:	580
Lot #:	37-116324636-3		

### ANALYTICAL RESULTS

Component	Requested Purity	Certified Concentration
NitrogenUltraHighPurity	99.999%	99.999%
CO + CO2	<1 PPM	0.48 PPM
Moisture	<1 PPM	0.015 PPM
Oxygen	<1 PPM	0.12 PPM
THC	<0.5 PPM	<LDL0.5 PPM

Notes:

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Approved for Release

# Airgas

## CERTIFICATE OF ANALYSIS Grade of Product

Part Number: E03NI60E15A1069  
Cylinder Number: CC349923  
Laboratory: ASG - Riverton - NJ  
PGVP Number: B52011

Reference Number: 82-124290016-1  
Cylinder Volume: 158 Cu.Ft.  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 590  
Analysis Date: Nov 09, 2011

Airgas Specialty Gases  
600 Union Landing Road  
Riverton, NJ 08077  
(856) 829-7878  
Fax (856) 829-0571  
[www.airgas.com](http://www.airgas.com)

Expiration Date:

1997" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder Below 150 psig, i.e. 1 Mega Pascal

Component	Requested Concentration	CALIBRATION RESULTS	
		Actual Concentration	Protocol Method
CARBON DIOXIDE	19.80 %	17.88 %	G1
OXYGEN	52.80 %	52.92 %	G1
NITROGEN	Balanced		

Type	Lot ID	Cylinder No	CALIBRATION STANDARDS		Expiration Date
			Concentration	Calibration Standard	
NTRMplus	06120212	CC195587	20.90% O <sub>2</sub>	OXYGEN/NITROGEN	Dec 01, 2015
NTRM	08061334	CC255709	20.09% O <sub>2</sub>	CARBON DIOXIDE/NITROGEN	Jul 15, 2012
ANALYTICAL EQUIPMENT					
Instrument/Make/Model			Analytical Principle	Last Multipoint Calibration	
Horiba VIA 510 LDH9LRNS			NDIR	Oct 20, 2011	
Siemens 5E BN805			Paramagnetic	Nov 09, 2011	

Triad Data Available Upon Request

Notes:

  
Approved for Release



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Airgas Specialty Gases

600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6578  
[www.airgas.com](http://www.airgas.com)

Part Number: E03NI80E15A0138  
Cylinder Number: CC408903  
Laboratory: ASG - Riverton - NJ  
PGVP Number: B52012  
Gas Code: OC2

Reference Number: 82-124324545-1  
Cylinder Volume: 151 Cu.Ft.  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 590  
Analysis Date: Jul 05, 2012

Expiration Date: Jul 05, 2015

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	10.00 %	9.941 %	G1	+/- 1% NIST Traceable
OXYGEN	10.00 %	10.01 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	09060602	CC262061	9.921% CARBON DIOXIDE/NITROGEN	Apr 10, 2013
NTRM	09060232	CC263096	9.961% OXYGEN/NITROGEN	Jan 15, 2013

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA 510-CO2-LDH9LRNS	NDIR	Jun 18, 2012
Siemens Oxymat 6E-O2-N1-M1-0603	Paramagnetic	Jun 11, 2012

Triad Data Available Upon Request

Notes:

Approved for Release



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E02NI99E15A0167  
Cylinder Number: CC57704  
Laboratory: ASG - Riverton - NJ  
PGVP Number: B52012  
Gas Code: NO

Reference Number: 82-124302502-1  
Cylinder Volume: 144 Cu.Ft.  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 660  
Analysis Date: Feb 16, 2012

Airgas Specialty Gases  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6576  
[www.airgas.com](http://www.airgas.com)

Expiration Date: Feb 16, 2014

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	450.0 PPM	451.4 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

Total oxides of nitrogen

452.6 PPM

For Reference Only

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRMplus	10060409	CC267937	495.6PPM NITRIC OXIDE/NITROGEN	Feb 01, 2016

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 APW1100391 NO	FTIR	Feb 03, 2012

Triad Data Available Upon Request

Notes:

Approved for Release

## CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol

Part Number: E02NI99E15A1625      Reference Number: 82-124331483-1  
Cylinder Number: CC365401      Cylinder Volume: 144.4 CF  
Laboratory: ASG - Riverton - NJ      Cylinder Pressure: 2015 PSIG  
PGVP Number: B52012      Valve Outlet: 660  
Gas Code: NO      Analysis Date: Aug 21, 2012

Expiration Date: Aug 21, 2020

Airgas Specialty Gases  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6578  
[www.airgas.com](http://www.airgas.com)

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	190.0 PPM	187.5 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

Total oxides of nitrogen      187.6 PPM      For Reference Only

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	12061951	CC367714	250.8 PPM NITRIC OXIDE/NITROGEN	May 04, 2018

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801933 NO	FTIR	Jul 27, 2012

Triad Data Available Upon Request

Notes:

Signature on file



Approved for Release

# Airgas

## CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol

Part Number: E02AI99E15A3243  
Cylinder Number: XC001760B  
Laboratory: ASG - Riverton - NJ  
PGVP Number: B52011

Reference Number: 82-124291317-1  
Cylinder Volume: 146 Cu.Ft.  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 590  
Analysis Date: Nov 22, 2011

Airgas Specialty Gases  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6576  
[www.airgas.com](http://www.airgas.com)

Expiration Date: Nov 22, 2014

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS				
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	190.0 PPM	193.6 PPM	G1	+/- 1% NIST Traceable
Air	Balance			
CALIBRATION STANDARDS				
Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRMplus	09060519	CC280699	98.88PPM CARBON MONOXIDE/NITROGEN	Feb 01, 2013
ANALYTICAL EQUIPMENT				
Instrument/Make/Model	Analytical Principle			Last Multipoint Calibration
Siemens 6E Ultramat L9-0191	NDIR			Oct 24, 2011

Triad Data Available Upon Request

Notes:

Jessica Lawrence  
Approved for Release

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E03NI99E15A0260 Reference Number: 82-124297002-1  
Cylinder Number: SG9136171 Cylinder Volume: 144.3 Cubic Feet  
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2015 PSIG  
PGVP Number: B52012 Valve Outlet: 660  
Gas Code: CO,NO Certification Date: Jan 11, 2012

**Expiration Date:** Jan 11, 2020

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	90.00 PPM	89.89 PPM	G1	+/- 1% NIST Traceable	01/05/2012, 01/11/2012
NITRIC OXIDE	90.00 PPM	89.57 PPM	G1	+/- 1% NIST Traceable	01/05/2012, 01/11/2012
NITROGEN	Balance				

Total oxides of nitrogen 89.75 PPM For Reference Only

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRMplus	09060519	CC280699	98.88 PPM CARBON MONOXIDE/NITROGEN		Feb 01, 2013
NTRM	11060545	CC331333	101.2 PPM NITRIC OXIDE/NITROGEN		Feb 16, 2017
NTRM	11060545	CC332017	101.2 PPM NITRIC OXIDE/NITROGEN		Feb 16, 2017

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Ultramat 6E CO2	NDIR	Dec 21, 2011
Nicolet 6700 APW1100391 NO	FTIR	Jan 05, 2012

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

# Airgas

## CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol

Part Number: E02AI99E15A3243 Reference Number: 82-124291317-1  
Cylinder Number: XC001760B Cylinder Volume: 146 Cu.Ft.  
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2015 PSIG  
PGVP Number: B52011 Valve Outlet: 590  
Analysis Date: Nov 22, 2011

**Airgas Specialty Gases**  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6576  
[www.airgas.com](http://www.airgas.com)

Expiration Date: Nov 22, 2014

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS				
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	190.0 PPM	183.6 PPM	G1	+/- 1% NIST Traceable
Air	Balance			
CALIBRATION STANDARDS				
Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRMplus	09060519	CC280699	98.88PPM CARBON MONOXIDE/NITROGEN	Feb 01, 2013
ANALYTICAL EQUIPMENT				
Instrument/Make/Model	Analytical Principle			Last Multipoint Calibration
Siemens 6E Ultramat L9-0191	NDIR			Oct 24, 2011

Triad Data Available Upon Request

Notes:

Jessica Lamer  
Approved for Release

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E02NI99E15A0257      Reference Number: 82-124313453-1  
 Cylinder Number: SG9169595      Cylinder Volume: 136 Cu.Ft.  
 Laboratory: ASG - Riverton - NJ      Cylinder Pressure: 1900 PSIG  
 PGVP Number: B52012      Valve Outlet: 660  
Analysis Date: Apr 18, 2012

**Expiration Date: Apr 18, 2014**

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	25.00 PPM	25.57 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	10061033	CC284678	14.82PPM SULFUR DIOXIDE/NITROGEN	Jul 13, 2013

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 APW1100391 SO2	FTIR	Apr 12, 2012

**Triad Data Available Upon Request**

Notes:RECERTIFICATION

PREVIOUS CERTIFIED DATE: 4/15/11

PREVIOUS CERTIFIED CONCENTRATION:

SO2: 25.50ppm

**Signature on file**

**Approved for Release**

## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

Part Number: E02NI99E15A0154 Reference Number: 82-124255465-1  
Cylinder Number: SG9165715 Cylinder Volume: 144.4 Cubic Feet  
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2015 PSIG  
PGVP Number: NONPGVP Valve Outlet: 660  
Gas Code: SO2 Certification Date: Mar 09, 2011

Expiration Date: Mar 09, 2015

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	45.00 PPM	47.20 PPM	G1	+/- 1% NIST Traceable	03/02/2011, 03/09/2011
NITROGEN	Balance				
CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	08061521	CC255342	94.67 PPM SULFUR DIOXIDE/NITROGEN		Oct 15, 2012
NTRM	10061019	CC283906	14.82 PPM SULFUR DIOXIDE/NITROGEN		Jul 13, 2013
ANALYTICAL EQUIPMENT					
Instrument/Make/Model	Analytical Principle		Last Multipoint Calibration		
Nicolet 6700 AHR0801933 SO2	FTIR		Feb 15, 2011		

Triad Data Available Upon Request

Notes:

Signature on file

Approved for Release

## CERTIFICATE OF ANALYSIS Grade of Product: EPA Protocol

Part Number: E02NI99E15A1004      Reference Number: 82-124326062-1  
Cylinder Number: CC411594      Cylinder Volume: 144.4 CF  
Laboratory: ASG - Riverton - NJ      Cylinder Pressure: 2015 PSIG  
PGVP Number: B52012      Valve Outlet: 660  
Gas Code: SO2      Analysis Date: Jul 23, 2012

Expiration Date: Jul 23, 2020

Airgas Specialty Gases  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-8576  
[www.airgas.com](http://www.airgas.com)

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	190.0 PPM	187.5 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	11060858	CC343562	241.0 PPM SULFUR DIOXIDE/NITROGEN	May 13, 2017

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801933 SO2	FTIR	Jun 27, 2012

Triad Data Available Upon Request

Notes:

Signature on file



Approved for Release

## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

Part Number: E02NI99E15A0259 Reference Number: 82-124252485-1  
Cylinder Number: CC347170 Cylinder Volume: 144.4 CF  
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2015 PSIG  
PGVP Number: NONPGVP Valve Outlet: 660  
Gas Code: SO2 Certification Date: Feb 17, 2011

Expiration Date: Feb 17, 2019

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
SULFUR DIOXIDE	450.0 PPM	452.4 PPM	G1	+/- 1% NIST Traceable	02/08/2011, 02/17/2011
NITROGEN	Balance				
CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09061039	CC306686	479.5 PPM SULFUR DIOXIDE/NITROGEN		May 15, 2015
ANALYTICAL EQUIPMENT					
Instrument/Make/Model	Analytical Principle		Last Multipoint Calibration		
Nicolet 6700 AHR0801933 SO2	FTIR		Feb 15, 2011		

Triad Data Available Upon Request

Notes:

Signature on file

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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Airgas Specialty Gases  
600 Union Landing Road  
Cinnaminson, NJ 08077  
(856) 829-7878 Fax: (856) 829-6576  
[www.airgas.com](http://www.airgas.com)

Part Number: E02NI99E15A0055 Reference Number: 82-124316103-1  
Cylinder Number: CC207464 Cylinder Volume: 144 Cu.Ft.  
Laboratory: ASG - Riverton - NJ Cylinder Pressure: 2014 PSIG  
PGVP Number: B52012 Valve Outlet: 660  
Gas Code: NO2 Analysis Date: May 17, 2012

Expiration Date: Nov 17, 2012

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

### ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITROGEN DIOXIDE	50.00 PPM	49.63 PPM	G1	+/- 2%
NITROGEN	Balance			

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
VIS	124233681105	CC341313	60.35PPM NITROGEN DIOXIDE/NITROGEN	Dec 28, 2013

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 42i-HL-NO-0627218610	Chemiluminescence	Apr 27, 2012

Triad Data Available Upon Request

Permanent Notes: OXYGEN ADDED TO MAINTAIN  
STABILITY

Notes:

C. Michalewski

Approved for Release

<u>Cylinder Gas</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
Zero ID	XC016138B	XC016138	XC016138	XC016138	XC016138	XC016138
Zero Expiration	2/26/2018	2/26/2018	2/26/2018	2/26/2018	2/26/2018	2/26/2018
Low ID		SG9142137		SG9175110		SG916959
Low Expiration			41757	41870		
Low Concentration	Ø	89.21	45.6	25.57		
	CC182678					CC411594
Mid ID		CC285502	SG9150412	SG916571	CC182678	
Mid Expiration	8/14/2020	8/11/2013	4/16/2015	4/18/2014		7/23/2020
Mid Concentration	9.79	187.2	89.53	47.2	9.79	187.5
	CC349923					
High ID		CC57704	XC001760B	SG9165780	CC349923	CC347170
High Expiration	11/9/2014	2/16/2014	11/22/2014	3/9/2013		2/17/2019
High Concentration	17.69	452.6	193.6	91.03	17.69	452.3
<u>Calibration Error</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	-0.01	0.04	-0.02	-0.12	-0.01	0.03
Zero Error (%)	-0.05	0.01	-0.01	-0.13	-0.05	0.01
Low Response	0	91.51	45.19	26.58		
Low Error (%)	0	0.51	-0.21	1.11		
Mid Response	9.98	189.65	89.9	47.92	10.1	188.87
Mid Error (%)	1.06	0.54	0.19	0.79	1.73	0.3
High Response	17.77	451.71	194.51	90.77	17.72	453.68
High Error (%)	0.43	-0.2	0.47	-0.29	0.17	0.31
<u>Initial Bias</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.08	-0.25	1.84	-0.8	0.28	0.04
Zero Bias (%)	0.52	-0.07	0.96	-0.75	1.63	0
Span Concentration	9.79	187.2	45.6	25.57	9.79	187.5
Span Response	9.96	187	45.37	24.33	9.94	177.55
Span Bias (%)	-0.11	-0.58	0.09	-2.47	-0.89	-2.5
<u>Final Bias &amp; Drift</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
Zero Response						
Zero Bias (%)						
Zero Drift (%)						
Span Concentration	9.79	187.2	45.6	25.57	9.79	187.5
Span Response						
Span Bias (%)						
Span Drift (%)						
<u>Results</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages						
<u>Log Averages</u>	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	CO2 (%) Inlet	SO2 (ppm) Inlet
28Feb2013 - 15:04:00	0.13	48.76	0.85	1.09	8.52	56.23
28Feb2013 - 15:05:00	0.03	48.8	0.77	0.58	8.49	55.77
28Feb2013 - 15:05:20	0.09	48	0.84	1.13	8.51	55.26
Average		48.5				

49.64 NO<sub>2</sub> gas

CC207464

97.7% Converter Efficiency

Regulation ≥ 90%

## **APPENDIX B**

### **UNIT 1**

### **REFERENCE METHOD DATA**

$T_r = U_{1-1}$

## Diluent and Flow Relative Accuracy

Covanta Hudson Valley  
Unit 1 Outlet  
Poughkeepsie, NY  
20-Feb-13

Run No.	1	2	3	4	5	6	7	8	9	10	Averages/ Total Count
Date	2/20/2013 09:26	2/20/2013 09:57	2/20/2013 10:25	2/20/2013 10:53	2/20/2013 11:21	2/20/2013 11:49	2/20/2013 12:19	2/20/2013 12:47	2/20/2013 13:16	2/20/2013 13:43	2/20/2013 13:43
Start Time	09:47	10:18	10:46	11:14	11:42	12:10	12:40	13:08	13:36	14:04	
Stop Time											
RM O2, %	12.87	11.86	11.36	12.05	11.75	11.48	11.40	10.47	11.29	12.17	11.66
CEM O2, %	13.16	12.08	11.55	12.28	12.08	11.25	11.15	10.71	11.44	11.89	11.72
Differences, d bar	-0.29	-0.22	-0.19	-0.23		0.25	0.25	-0.24	-0.15	0.28	-0.06
Use Run (Y/N)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	9
% Relative Accuracy	Em. Limit	RA em. limit	T value	SDEV	CC	CC	CC	CC	CC	CC	
2.1			2.31	0.24	0.18						

T<sub>N</sub>-E U1-2  
Oxides of Nitrogen Relative Accuracy

Covanta Hudson Valley  
Unit 1 Outlet  
Poughkeepsie, NY  
20-Feb-13

Run No, Date	1 2/20/2013	2 2/20/2013	3 2/20/2013	4 2/20/2013	5 2/20/2013	6 2/28/2013	7 2/28/2013	8 2/20/2013	9 2/28/2013	10 2/20/2013	Averages/ Total Count
Start Time	09:26	09:57	10:25	10:53	11:21	11:49	12:19	12:47	13:16	13:43	
Stop Time	09:47	10:18	10:46	11:14	11:42	12:10	12:40	13:08	13:36	14:04	
RM NOX, @7%O2	144.2	124.9	101.8	123.3	113.2	96.9	93.0	74.3	100.7	111.6	104.41
CEM NOX, @7%O2	152	126	106	129	118	102	98	78	103	116	108.44
Differences, d bar	-1.13	-4.17	-5.71	-4.83	-5.10	-4.99	-3.72	-3.72	-2.26	-4.43	-4.04
Use Run (Y/N)	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	9
% Relative Accuracy	Em. Limit	RA em. limit	T value	SDEV	CC	1.13					
4.9	170	3.0	2.31	1.47							

1. -E U1-3  
 Sulfur Dioxide Relative Accuracy

Covanta Hudson Valley  
 Unit 1 Outlet  
 Poughkeepsie, NY  
 20-Feb-13

Run No.	1	2	3	4	5	6	7	8	9	10	Averages/ Total Count
Date	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	
Start Time	09:26	09:57	10:26	10:53	11:21	11:48	12:19	12:47	13:16	13:36	13:43
Stop Time	09:47	10:38	10:46	11:14	11:42	12:10	12:40	13:08	13:36	14:04	14:04
RM SO2 DRE	100.0	100.0	100.0	99.6	100.0	99.2	99.7	100.0	99.5	98.2	99.78
CEM SO2 DRE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00
Differences, d bar	0.0	0.0	0.0	-0.4	0.0	-0.8	-0.3	0.0	-0.5	Discard	-0.22
Use Run (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	9
% Relative Accuracy	Em. Limit	RA em. limit	T value	SDEV	CC						
0.4	75	0.6	2.31	0.30	0.23						
RM SO2, @7%O2	0.0	0.0	0.0	0.1	0.0	0.5	0.2	0.0	0.4	1.5	0.14
CEM SO2, @7%O2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Differences, d bar	0.0	0.0	0.0	0.1	0.0	0.5	0.2	0.0	0.4	Discard	0.14
Use Run (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	9
% Relative Accuracy	Em. Limit	RA em. limit	T value	SDEV	CC						
209.7	31	1.0	2.31	0.21	0.16						

7.  $\pm$  U1-4  
 Carbon Monoxide Relative Accuracy

Covanta Hudson Valley  
 Unit 1 Outlet  
 Poughkeepsie, NY  
 20-Feb-13

Run No.	1	2	3	4	5	6	7	8	9	10	Averages/ Total Count
Date	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	2/20/2013	
Start Time	09:26	09:57	10:26	10:53	11:21	11:49	12:19	12:47	13:16	13:43	
Stop Time	09:57	10:18	10:46	11:14	11:42	12:10	12:40	13:00	13:36	14:04	
RM CO, @7%O2	15.9	15.9	28.9	17.2	18.8	72.0	32.3	132.4	21.2	16.7	26.55
CEM CO, @7%O2	18.0	15.0	26.0	18.0	20.0	62.0	32.0	118.0	23.0	19.0	25.89
Differences, d bar	-2.1	0.9	2.9	-0.8	-1.2	10.0	0.3	Discard	-1.8	-2.3	0.66
Use Run (Y/N)	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	9
% Relative Accuracy	Em. Limit	RA em. limit	T value	SDEV	CC						
13.8	250	1.5	2.31	3.90	3.00						

TAL J1-5  
Summary of Reference Method DataCovanta Hudson Valley  
Unit 1 Outlet  
Poughkeepsie, NY  
02/20/13

Run No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	AVERAGES	Permit Limits
Date	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	
Start Time	09:26	09:37	10:25	10:53	11:22	11:48	12:19	12:47	13:15	13:43	13:56	13:58	13:58	13:58	13:58	13:58	
Stop Time	09:47	10:18	10:46	11:14	11:52	12:10	12:40	13:08	13:36	14:04							
CO2 %	12.87	11.86	11.36	12.05	11.75	11.48	11.40	10.47	11.29	12.17							
CO2 %	7.23	8.08	8.50	7.70	7.92	8.18	8.30	9.21	8.44	7.67							
<b>GASBOUS EMISSIONS</b>																	
NOx ppm	83.30	81.21	69.89	78.50	74.50	65.67	63.57	55.74	69.65	70.07							
NOx (@ 7% U2)	144.2	124.9	101.8	123.3	113.2	96.9	93.0	74.3	100.7	111.6							
Outlet SU2 ppm	0.00	0.00	0.00	0.09	0.00	0.36	0.12	0.00	0.30	0.96							
Outlet SU2 (@ 7% U2)	0.0	0.0	0.0	0.1	0.0	0.5	0.2	0.0	0.4	1.5							
Inlet SU2 (@ 7% U2)	42.7	30.4	41.5	40.0	34.9	63.3	63.9	81.6	93.8	85.5							
URE	100.0	100.0	99.6	100.0	99.2	99.7	100.0	99.5	100.0	98.2							
Cu ppm	9.17	10.36	19.83	10.92	12.38	48.82	22.10	99.34	14.67	10.47							
Cu (@ 7% U2)	15.9	15.9	28.9	17.2	18.8	72.0	32.3	132.4	21.2	16.7							

## Table U1.6

## Summary of CEM Data

Covanta Hudson Valley  
Unit 1 Outlet  
Poughkeepsie, NY  
02/20/13

Run No.	1	2	3	4	5	6	7	8	9	10	11/20/13	13.43	Permit Limits
Date	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	13.15	13.36	
Start Time	09:26	09:57	10:25	10:53	11:21	11:48	12:47	12:47	12:47	12:47	12:47	13.36	14.04
Stop Time	09:47	10:18	10:46	11:14	11:42	12:10	12:40	12:40	12:40	12:40	12:40	13.36	14.04
O2 %													
CO2 %													
GASEOUS EMISSIONS													
NOx @ 7% O2	152	126	106	129	118	102	98	78	103	116	116	116	170
SO2 @ 7% O2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31
SO2 DRE	100	100	100	100	100	100	100	100	100	100	100	100	75
CO @ 7% O2 Low	18.0	15.0	26.0	18.0	20.0	62.0	32.0	118.0	23.0	19.0	19.0	19.0	250

**Sulfur Dioxide Relative Accuracy**

$T_{\text{spike}} - \bar{E}$  **U-7**

Covanta Hudson Valley  
Unit 1 Inlet  
Poughkeepsie, NY  
20-Feb-13

TA U1-8  
Summary of Reference Method Data

Covanta Hudson Valley  
Unit 1 Inlet  
Poughkeepsie, NY  
02/20/13

Run No.	1	2	3	4	5	6	7	8	9	10	02/20/13 12:47	02/20/13 13:15	02/20/13 13:36	Permit Limits
Date	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	
Start Time	08:26	09:57	10:25	10:53	11:21	11:48	12:19	12:47	13:05	13:36	13:44	13:55	14:04	
Stop Time	08:47	10:18	10:46	11:14	11:42	12:10	12:40							
O2 %	11.24	10.02	9.45	10.10	9.67	8.73	8.86	8.54	9.39	9.91				
<b>GASEOUS EMISSIONS</b>														
SO2 PPM	29.66	23.83	34.17	31.06	28.23	55.44	55.37	72.52	77.71	67.62				
SO2 @ 7% O2	42.7	30.4	41.5	40.0	34.9	63.3	63.9	81.6	93.8	85.5				

TA U1-9  
Summary of CEM Data

Covanta Hudson Valley  
Unit 1 Inlet  
Poughkeepsie, NY  
02/20/13

Run No	1	2	3	4	5	6	7	8	9	10	
Date	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	02/20/13	Permit Limits
Start Time	09:26	09:55	10:25	10:53	11:21	11:48	12:19	12:47	13:15	13:43	
Step Time	09:47	10:18	10:46	11:14	11:42	12:10	12:40	13:08	13:36	14:04	
GASEOUS EMISSIONS											
SO2 @ 7% O2	44.0	37.0	42.0	39.0	38.0	63.0	71.0	84.0	93.0	91.0	

## **APPENDIX C**

### **UNIT 2**

### **REFERENCE METHOD DATA**

E U2-1  
Diluent and Flow Relative Accuracy

Covanta Hudson Valley  
Unit 2 Outlet  
Poughkeepsie, NY  
21-Feb-13

Run No.	1	2	3	4	5	6	7	8	9	10	11	12	Averages	Total Count
Date	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	21/21/2013	
Start Time	07:46	07:55	08:23	08:50	09:19	09:46	10:13	10:39	11:06	11:31	11:57	12:23		
Stop Time	07:47	08:16	08:44	09:11	09:40	10:07	10:34	11:00	11:36	11:52	12:18	12:44		
RM O2, %	12.02	10.66	10.50	11.33	11.37	11.95	11.24	10.83	10.46	10.97	11.24	10.78	11.04	
CEM O2, %	11.70	10.80	10.80	11.00	11.30	12.10	11.30	11.10	10.70	11.10	11.00	10.60	11.04	
Differences, d bar	0.32	-0.14	-0.30	0.33	0.07	0.27	-0.27	-0.06	-0.24	-0.13	0.24	0.18	0.00	
User Run (Y/N)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	
% Relative Accuracy	1.4	Em. Limit	RA em. Limit	T value	SDEV	CC	0.16	0.24	0.23	2.23	0.16	0.16	0.16	

## Oxides of Nitrogen Relative Accuracy

Covanta Hudson Valley  
Unit 2 Outlet  
Poughkeepsie, NY  
21-Feb-13

E U2-3  
Sulfur Dioxide Relative Accuracy

Covanta Hudson Valley  
Unit 2 Outlet  
Poughkeepsie, NY  
21-Feb-13

Run No	1	2	3	4	5	6	7	8	9	10	11	12
Date	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013	2/21/2013
Start Time	07:26	07:35	08:23	08:50	08:59	09:46	10:13	10:59	11:05	11:38	11:57	12:23
Stop Time	07:47	08:16	08:44	09:11	09:40	10:07	10:34	11:06	11:26	11:52	12:18	12:44
RM SO2 DRE	91.1	85.2	92.3	92.4	91.9	94.2	96.5	96.9	94.8	96.8	99.3	94.4
CEM SO2 DRE	91.0	84.0	92.0	93.0	92.0	99.0	99.0	96.0	93.0	98.0	100.0	92.0
Differences, d bar	0.12	1.17	0.34	-0.63	-0.12	Discard	Discard	0.93	1.84	-1.24	-0.72	Discard
Use Run (Y/N)	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N
% Relative Accuracy	1.0	Em. Limit	RA em. limit	T value	SDEV	CC	0.76					
RM SO2, @ 7%O2	11.19	21.07	10.68	11.91	10.85	6.12	3.64	3.35	5.45	2.87	0.52	4.23
CEM SO2, @ 7%O2	12.0	22.0	10.0	11.0	10.0	1.0	1.0	5.0	7.0	2.0	0.0	6.0
Differences, d bar	-0.81	-0.93	0.68	0.91	0.65	Discard	Discard	-1.65	-1.55	0.87	0.52	Discard
Use Run (Y/N)	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N
% Relative Accuracy	11.2	Em. Limit	RA em. limit	T value	SDEV	CC	0.82					
	31	3.1	2.31	1.07	0.82							



TABLE -5

Summary of Reference Method Data

Covanta Hudson Valley  
Unit 2 Outlet  
Poughkeepsie, NY  
02/21/13

Run No.	1 02/21/13	2 02/21/13	3 02/21/13	4 02/21/13	5 02/21/13	6 02/21/13	7 02/21/13	8 02/21/13	9 02/21/13	10 02/21/13	11 02/21/13	12 02/21/13	Permit Limits
Date	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	
Start Time	07:26	07:55	08:23	08:50	09:19	09:46	10:13	10:39	11:03	11:31	11:57	12:23	
Stop Time	07:47	08:18	08:44	09:51	09:50	10:37	10:34	11:06	11:26	11:56	12:18	12:44	
O2 %	12.02	10.66	10.50	11.33	11.37	11.95	11.24	10.83	10.46	10.97	11.24	10.78	
CO2 %	7.85	8.89	9.03	8.39	8.31	7.76	8.40	8.76	9.12	8.73	8.45		
<b>GASUS EMISSIONS</b>													
Nox PPM	91.77	87.30	84.03	79.12	87.80	91.18	83.40	89.76	89.91	90.84	81.72	82.79	
Nox @ 7% LE	143.6	118.5	112.3	114.9	128.1	141.6	120.0	123.9	119.7	127.2	117.6	113.7	170
Outlet SO2 PPM	7.15	15.52	7.99	8.20	7.30	3.94	2.53	2.43	4.09	2.05	0.36	3.08	
Outlet SO2 @ 7% LE	11.2	21.1	10.7	11.9	10.6	6.1	3.6	3.4	5.4	2.9	0.5	4.2	31
Inlet SO2 @ 7% LE	126.0	142.1	139.4	156.1	131.1	105.2	104.3	109.2	105.5	88.5	71.8	75.8	
URE	91.1	85.2	92.3	92.4	91.9	94.2	96.5	96.9	94.8	96.8	99.3	94.4	>75
CO PPM	29.18	91.70	127.40	117.32	55.38	41.19	82.13	51.54	47.76	59.79	77.73	83.10	
CO @ 7% O2	45.7	124.5	170.3	170.4	80.8	64.0	118.2	71.1	63.6	83.7	111.8	114.1	250

**TABLE 3**  
**Summary of CEM Data**  
Covanta Hudson Valley  
Unit 2 Outlet  
Poughkeepsie, NY  
02/21/13

Run No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Date	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13
Start Time	07:55	08:23	08:50	09:18	09:46	10:13	10:40	10:46	11:03	11:30	11:47	11:54	11:52	11:57	11:33	11:23
Stop Time	08:16	08:44	09:11	09:39	10:07	10:34	11:00	11:26	11:52	12:18	12:34	12:51	12:59	13:06	13:34	13:44
O2 %	11.7	10.8	10.8	11.0	11.3	12.1	11.3	11.1	10.7	11.1	10.7	11.1	10.6	10.6	10.6	10.6
CO2 %	8.0	8.7	8.7	8.6	8.3	8.4	7.6	8.4	8.6	8.9	8.5	8.5	8.5	8.5	8.5	8.5
GASEOUS EMISSIONS																
NOx @ 7% O2	153	128	126	125	138	155	133	134	134	137	130.0	126.0				
SO2 @ 7% O2	12.0	22.0	10.0	11.0	10.0	1.0	1.0	5.0	7.0	2.0	0.0	6.0				
SO2 DRE	91.0	84.0	92.0	93.0	92.0	99.0	99.0	96.0	93.0	98.0	100.0	92.0				
CO @ 7% O2 LOW	59.0	131.0	161.0	128.0	87.0	75.0	109.0	79.0	72.0	85.0	109.0	104.0				

Sulfur Dioxide Relative Accuracy

covanta Hudson Valley  
Unit 2 Inlet  
Poughkeepsie, NY  
21-Feb-13

TABLE I

Summary of Reference Method Data

Covanta Hudson Valley  
Unit 2 Inlet  
Poughkeepsie, NY  
02/21/13

Run No	1	2	3	4	5	6	7	8	9	10	11	12
Date	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13	02/21/13
Start Time	07:28	07:55	08:13	08:56	09:19	09:46	10:13	10:39	11:31	11:57	12:23	Permit Limits
Stop Time	07:47	08:16	08:44	09:11	09:40	10:07	10:45	11:00	11:52	12:18	12:45	
O2 %	9.91	9.13	8.96	9.26	9.70	10.75	9.30	9.94	9.04	9.80	9.01	10.69
GASEOUS EMISSIONS												
SO2 PPM	99.60	120.30	119.72	130.70	105.65	76.83	87.00	86.07	90.03	70.64	61.41	55.69
SO2 @ 7% O2	126.0	142.1	139.4	156.1	131.1	105.2	104.3	109.2	105.5	88.5	71.8	75.8

TABLE J  
Summary of CEM Data  
Covanta Hudson Valley  
Unit 2 Inlet  
Poughkeepsie, NY  
02/21/13

Run #6, Date Start Time Stop Time	1 02/21/13 07:28 07:49	2 02/21/13 07:55 09:16	3 02/21/13 08:23 09:44	4 02/21/13 08:50 09:11	5 02/21/13 08:19 09:40	6 02/21/13 09:46 10:07	7 02/21/13 09:46 10:07	8 02/21/13 09:46 10:07	9 02/21/13 10:38 11:06	10 02/21/13 11:45 11:54	11 02/21/13 11:31 11:57	12 02/21/13 12:18 12:44	Permit Limits
<b>GASEOUS EMISSIONS</b>													
SO2 @ 7% O2	129.0	136.0	132.0	143.0	125.0	103.0	106.0	107.0	105.0	87.0	73.0	79.0	

**APPENDIX D**  
**UNIT 1 – COVANTA**  
**CEM & PROCESS DATA**

# Data Summary Report

**COVANTA  
ENERGY**

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Group:** All Data Groups

**Report Name:** zzU1-Rata

**Start of Report:** 02/20/2013 09:26

**End of Report:** 02/20/2013 09:46

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2 Red	1-StmLoad	1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 09:26 ✓	13.80	23	159	0	100	36.1	45
02/20/2013 09:27	13.70	29	156	0	100	35.3	43
02/20/2013 09:28	13.80	35	149	0	100	34.2	43
02/20/2013 09:29	14.00	28	155	0	100	35.4	43
02/20/2013 09:30	13.87	16	166	0	100	36.2	42
02/20/2013 09:31	13.52	17	160	0	100	38.1	40
02/20/2013 09:32	13.51	21	152	0	100	38.1	44
02/20/2013 09:33	13.60	25	156	0	100	39.5	51
02/20/2013 09:34	13.38	33	144	0	100	42.8	49
02/20/2013 09:35	12.70	22	141	0	100	44.1	44
02/20/2013 09:36	12.60	15	144	0	100	44.4	44
02/20/2013 09:37	12.65	12	145	0	100	43.3	43
02/20/2013 09:38	12.87	10	149	0	100	41.2	45
02/20/2013 09:39	12.99	12	149	0	100	42.3	41
02/20/2013 09:40	12.85	14	152	0	100	42.7	40
02/20/2013 09:41	12.81	15	155	0	100	41.2	42
02/20/2013 09:42	12.90	12	158	0	100	42.6	43
02/20/2013 09:43	12.90	9	158	0	100	43.5	43
02/20/2013 09:44	12.84	7	155	0	100	42.9	43
02/20/2013 09:45 ✓	12.58	10	150	0	100	45.0	46
02/20/2013 09:46 ✓	12.50	12	137	0	100	45.9	51
<b>Period Average =</b>	13.16 ✓	18 ✓	152 ✓	0 ✓	100 ✓	40.7	44 ✓
<b>Period Max Value =</b>	14.00	35	166	0	100	45.9	51
<b>Period Min Value =</b>	12.50	7	137	0	100	34.2	40
<b>Period Totals =</b>	2.7637E+2	3.7700E+2	3.1900E+3	0.0000E+0	2.1000E+3	8.5480E+2	9.2500E+2
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

Company:

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**COVANTA**  
**E N E R G Y**

Da Group:

All Data Groups

Report Name:

zzU1-Rata

Start of Report:

02/20/2013 09:57

End of Report:

02/20/2013 10:17

Validation: Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad 1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 09:57	12.50	13	137	0	100	47.7	39
02/20/2013 09:58	12.36	11	133	0	100	47.7	37
02/20/2013 09:59	12.30	13	128	0	100	46.9	37
02/20/2013 10:00	12.29	15	119	0	100	46.4	38
02/20/2013 10:01	12.09	22	115	0	100	46.6	39
02/20/2013 10:02	11.90	15	130	0	100	46.9	38
02/20/2013 10:03	11.72	14	124	0	100	47.5	40
02/20/2013 10:04	11.67	14	125	0	100	48.5	39
02/20/2013 10:05	11.60	12	124	0	100	52.5	37
02/20/2013 10:06	11.57	16	125	0	100	57.1	38
02/20/2013 10:07	11.37	20	111	0	100	53.5	33
02/20/2013 10:08	11.41	18	116	0	100	49.4	32
02/20/2013 10:09	12.05	14	129	0	100	47.3	32
02/20/2013 10:10	12.48	12	142	0	100	43.8	33
02/20/2013 10:11	12.54	12	138	0	100	40.5	34
02/20/2013 10:12	12.60	12	134	0	100	41.7	35
02/20/2013 10:13	12.49	13	126	0	100	42.0	35
02/20/2013 10:14	12.40	11	136	0	100	43.6	35
02/20/2013 10:15	12.37	23	124	0	100	44.9	39
02/20/2013 10:16	12.05	22	118	0	100	47.7	39
02/20/2013 10:17	11.84	17	114	0	100	50.9	38
<b>Period Average =</b>	12.08	15	126	0	100	47.3	37
<b>Period Max Value =</b>	12.60	23	142	0	100	57.1	40
<b>Period Min Value =</b>	11.37	11	111	0	100	40.5	32
<b>Period Totals =</b>	2.5360E+2	3.1900E+2	2.6480E+3	0.0000E+0	2.1000E+3	9.9310E+2	7.6700E+2
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
 Dutchess Co. Resource Recovery  
 Poughkeepsie, NY 12601

**ca Group:** All Data Groups

**Report Name:** zzU1-Rata

**Start of Report:** 02/20/2013 10:25

**End of Report:** 02/20/2013 10:45

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad 1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 10:25✓	12.03	14	125	0	100	50.5	35
02/20/2013 10:26	11.76	14	114	0	100	50.3	36
02/20/2013 10:27	11.56	24	95	0	100	49.8	36
02/20/2013 10:28	11.31	14	106	0	100	49.4	43
02/20/2013 10:29	11.40	23	94	0	100	49.3	42
02/20/2013 10:30	11.37	31	99	0	100	50.7	44
02/20/2013 10:31	11.35	23	103	0	100	53.9	45
02/20/2013 10:32	11.40	20	101	0	100	55.3	39
02/20/2013 10:33	11.33	15	109	0	100	53.3	38
02/20/2013 10:34	11.45	12	115	0	100	51.6	39
02/20/2013 10:35	11.60	18	105	0	100	49.6	44
02/20/2013 10:36	11.62	25	105	0	100	49.7	44
02/20/2013 10:37	11.81	21	112	0	100	49.1	41
02/20/2013 10:38	11.90	15	114	0	100	48.0	45
02/20/2013 10:39	11.97	17	112	0	100	47.1	43
02/20/2013 10:40	11.88	23	109	0	100	48.7	44
02/20/2013 10:41	11.52	22	104	0	100	50.9	40
02/20/2013 10:42	11.33	17	105	0	100	52.7	42
02/20/2013 10:43	11.47	29	109	0	100	52.6	47
02/20/2013 10:44✓	11.34	74	90	0	100	52.5	49
02/20/2013 10:45✓	11.11	85	94	0	100	53.2	42
<b>Period Average =</b>	11.55✓	26✓	106✓	0✓	100✓	50.9	42✓
<b>Period Max Value =</b>	12.03	85	125	0	100	55.3	49
<b>Period Min Value =</b>	11.11	12	90	0	100	47.1	35
<b>Period Totals =</b>	2.4251E+2	5.3600E+2	2.2200E+3	0.0000E+0	2.1000E+3	1.0682E+3	8.7800E+2
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
E N E R G Y

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups  
**Report Name:** zzU1-Rata  
**Start of Report:** 02/20/2013 10:53  
**End of Report:** 02/20/2013 11:13

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2 Red	1-StmLoad	1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 10:53	12.28	19	131	0	100	43.1	37
02/20/2013 10:54	12.54	20	130	0	100	44.0	39
02/20/2013 10:55	12.46	18	125	0	100	46.2	39
02/20/2013 10:56	12.29	19	118	0	100	46.9	37
02/20/2013 10:57	12.17	18	118	0	100	46.6	36
02/20/2013 10:58	12.10	19	118	0	100	46.8	37
02/20/2013 10:59	12.20	22	113	0	100	46.1	40
02/20/2013 11:00	12.29	15	134	0	100	45.3	40
02/20/2013 11:01	12.40	15	136	0	100	45.0	44
02/20/2013 11:02	12.39	20	132	0	100	45.3	39
02/20/2013 11:03	12.15	13	140	0	100	45.7	35
02/20/2013 11:04	12.18	13	137	0	100	45.4	37
02/20/2013 11:05	12.26	13	132	0	100	45.1	37
02/20/2013 11:06	12.25	16	133	0	100	44.8	36
02/20/2013 11:07	12.22	19	131	0	100	42.6	37
02/20/2013 11:08	12.44	18	138	0	100	42.2	45
02/20/2013 11:09	12.58	23	139	0	100	45.4	43
02/20/2013 11:10	12.31	18	141	0	100	47.0	40
02/20/2013 11:11	12.10	14	130	0	100	45.9	36
02/20/2013 11:12	12.10	21	115	0	100	46.1	35
02/20/2013 11:13	12.13	17	120	0	100	46.2	40
<b>Period Average =</b>	12.28 ✓	18✓	129 ✓	0 ✓	100 ✓	45.3	39 ✓
<b>Period Max Value =</b>	12.58	23	141	0	100	47.0	45
<b>Period Min Value =</b>	12.10	13	113	0	100	42.2	35
<b>Period Totals =</b>	2.5784E+2	3.7000E+2	2.7110E+3	0.0000E+0	2.1000E+3	9.5170E+2	8.0900E+2
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
 Dutchess Co. Resource Recovery  
 Poughkeepsie, NY 12601

**ca Group:** All Data Groups

**Report Name:** zzU1-Rata

**Start of Report:** 02/20/2013 11:21

**End of Report:** 02/20/2013 11:41

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 11:21 ✓	12.30	27	123	0	100	43.6	31
02/20/2013 11:22	12.18	35	104	0	100	43.9	27
02/20/2013 11:23	12.18	27	112	0	100	42.8	31
02/20/2013 11:24	12.66	19	133	0	100	43.4	35
02/20/2013 11:25	12.56	13	142	0	100	45.9	38
02/20/2013 11:26	12.18	14	128	0	100	45.9	36
02/20/2013 11:27	11.88	17	105	0	100	45.1	35
02/20/2013 11:28	11.80	18	102	0	100	47.0	36
02/20/2013 11:29	11.97	22	109	0	100	49.0	41
02/20/2013 11:30	12.10	22	111	0	100	50.1	37
02/20/2013 11:31	11.84	21	112	0	100	48.7	40
02/20/2013 11:32	11.80	21	110	0	100	47.9	38
02/20/2013 11:33	11.80	20	112	0	100	47.3	35
02/20/2013 11:34	11.84	15	124	0	100	47.0	34
02/20/2013 11:35	12.15	16	124	0	100	47.4	37
02/20/2013 11:36	12.20	14	125	0	100	44.5	41
02/20/2013 11:37	12.20	21	120	0	100	43.2	44
02/20/2013 11:38	12.17	22	115	0	100	43.4	41
02/20/2013 11:39	12.03	19	124	0	100	45.6	44
02/20/2013 11:40	12.00	19	130	0	100	47.4	45
02/20/2013 11:41 ✓	11.89	19	123	0	100	48.2	43
<b>Period Average =</b>	12.08 ✓	20 ✓	118 ✓	0 ✓	100 ✓	46.1	38 ✓
<b>Period Max Value =</b>	12.66	35	142	0	100	50.1	45
<b>Period Min Value =</b>	11.80	13	102	0	100	42.8	27
<b>Period Totals =</b>	2.5373E+2	4.2100E+2	2.4880E+3	0.0000E+0	2.1000E+3	9.6730E+2	7.8900E+2
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

Company:

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



Data Group:

All Data Groups

Report Name:

zzU1-Rata

Start of Report:

02/20/2013 11:49

End of Report:

02/20/2013 12:09

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad 1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 11:49 ✓	11.10	20	105	0	100	50.2	54
02/20/2013 11:50	11.10	35	109	0	100	48.2	49
02/20/2013 11:51	11.11	27	111	0	100	47.5	49
02/20/2013 11:52	11.45	15	116	0	100	46.6	51
02/20/2013 11:53	11.55	13	125	0	100	46.9	60
02/20/2013 11:54	11.74	20	112	0	100	46.6	57
02/20/2013 11:55	11.78	23	108	0	100	45.8	52
02/20/2013 11:56	11.70	23	122	0	100	45.5	57
02/20/2013 11:57	11.95	17	123	0	100	47.8	63
02/20/2013 11:58	11.85	15	117	0	100	50.9	63
02/20/2013 11:59	11.30	20	106	0	100	51.7	56
02/20/2013 12:00	11.14	21	105	0	100	50.9	58
02/20/2013 12:01	11.15	20	105	0	100	51.0	58
02/20/2013 12:02	11.37	20	106	0	100	48.3	68
02/20/2013 12:03	11.40	19	107	0	100	49.3	78
02/20/2013 12:04	11.35	54	102	0	100	52.0	81
02/20/2013 12:05	11.00	93	79	0	100	52.7	74
02/20/2013 12:06	10.67	125	79	0	100	52.3	78
02/20/2013 12:07	10.59	143	77	0	100	52.2	84
02/20/2013 12:08	10.67	383	63	0	100	51.3	74
02/20/2013 12:09 ✓	10.35	188	61	0	100	50.9	64 ✓
<b>Period Average =</b>	11.25 ✓	62 ✓	102 ✓	0 ✓	100 ✓	49.5	63 ✓
<b>Period Max Value =</b>	11.95	383	125	0	100	52.7	84
<b>Period Min Value =</b>	10.35	13	61	0	100	45.5	49
<b>Period Totals =</b>	2.3632E+2	1.2940E+3	2.1380E+3	0.0000E+0	2.1000E+3	1.0386E+3	1.3280E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** zzU1-Rata

**Start of Report:** 02/20/2013 12:19

**End of Report:** 02/20/2013 12:39

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOX@7%	1-SO2@7%	1-SO2	Red 1-StmLoad	1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 12:19	11.35	22	106	0	100	48.5	62
02/20/2013 12:20	11.40	25	99	0	100	47.5	62
02/20/2013 12:21	11.40	28	101	0	100	49.3	65
02/20/2013 12:22	11.47	18	116	0	100	49.8	60
02/20/2013 12:23	11.17	14	114	0	100	49.3	65
02/20/2013 12:24	11.39	23	105	0	100	50.9	73
02/20/2013 12:25	11.46	28	93	0	100	52.4	79
02/20/2013 12:26	11.13	51	85	0	100	52.2	69
02/20/2013 12:27	10.90	32	92	0	100	51.3	67
02/20/2013 12:28	11.10	28	89	0	100	48.6	64
02/20/2013 12:29	11.28	26	97	0	100	47.6	64
02/20/2013 12:30	11.58	21	110	0	100	48.2	68
02/20/2013 12:31	11.70	18	118	0	100	50.2	76
02/20/2013 12:32	11.52	19	107	0	100	52.5	76
02/20/2013 12:33	11.21	26	93	0	100	53.4	80
02/20/2013 12:34	11.06	40	81	0	100	53.0	82
02/20/2013 12:35	10.66	45	81	0	100	53.3	75
02/20/2013 12:36	10.48	44	87	0	100	55.3	74
02/20/2013 12:37	10.43	81	86	0	100	56.8	78
02/20/2013 12:38	10.64	38	95	0	100	56.3	76
02/20/2013 12:39	10.80	51	102	0	100	54.8	82
<b>Period Average =</b>	11.15 ✓	32 ✓	98 ✓	0 ✓	100 ✓	51.5	71 ✓
<b>Period Max Value =</b>	11.70	81	118	0	100	56.8	82
<b>Period Min Value =</b>	10.43	14	81	0	100	47.5	60
<b>Period Totals =</b>	2.3413E+2	6.7800E+2	2.0570E+3	0.0000E+0	2.1000E+3	1.0812E+3	1.4970E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups  
**Report Name:** zzU1-Rata  
**Start of Report:** 02/20/2013 12:47  
**End of Report:** 02/20/2013 13:07

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 12:47	11.14	41	104	0	100	50.6	76
02/20/2013 12:48	11.10	23	106	0	100	50.9	75
02/20/2013 12:49	11.10	23	96	0	100	51.1	75
02/20/2013 12:50	11.10	23	98	0	100	52.4	79
02/20/2013 12:51	11.04	38	85	0	100	53.3	83
02/20/2013 12:52	10.83	81	76	0	100	54.2	83
02/20/2013 12:53	10.70	79	75	0	100	58.2	87
02/20/2013 12:54	10.58	175	66	0	100	61.0	86
02/20/2013 12:55	10.27	378	59	0	100	54.4	79
02/20/2013 12:56	10.23	142	72	0	100	52.5	82
02/20/2013 12:57	10.50	140	71	0	100	52.0	84
02/20/2013 12:58	10.50	78	74	0	100	51.7	85
02/20/2013 12:59	10.58	79	75	0	100	51.9	92
02/20/2013 13:00	10.60	185	69	0	100	51.1	87
02/20/2013 13:01	10.53	115	68	0	100	50.9	93
02/20/2013 13:02	10.79	139	70	0	100	52.8	100
02/20/2013 13:03	10.64	436	64	0	100	55.0	94
02/20/2013 13:04	10.31	201	67	1	99	58.6	85
02/20/2013 13:05	10.52	50	82	1	99	55.2	75
02/20/2013 13:06	10.72	25	82	0	100	51.4	73
02/20/2013 13:07 ✓	11.11	20	87	0	100	49.8	90
<b>Period Average =</b>	10.71 ✓	118 ✓	78 ✓	0 ✓	100 ✓	53.3	84 ✓
<b>Period Max Value =</b>	11.14	436	106	1	100	61.0	100
<b>Period Min Value =</b>	10.23	20	59	0	99	49.8	73
<b>Period Totals =</b>	2.2489E+2	2.4710E+3	1.6460E+3	2.0000E+0	2.0980E+3	1.1190E+3	1.7630E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
 Dutchess Co. Resource Recovery  
 Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** zzU1-Rata

**Start of Report:** 02/20/2013 13:15

**End of Report:** 02/20/2013 13:35

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2 CO	Corr. NOx	Corr. SO2	Corr. SO2	Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2	Red	1-StmLoad
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 13:15 ✓	10.44	56	76	0	100	52.0	88
02/20/2013 13:16	10.81	22	87	0	100	51.2	86
02/20/2013 13:17	11.06	20	93	0	100	52.1	94
02/20/2013 13:18	11.10	20	91	0	100	51.6	92
02/20/2013 13:19	11.13	31	88	0	100	51.1	83
02/20/2013 13:20	11.38	26	98	0	100	48.6	79
02/20/2013 13:21	11.68	17	116	0	100	46.5	87
02/20/2013 13:22	12.09	14	133	0	100	47.1	94
02/20/2013 13:23	12.18	18	121	0	100	48.3	91
02/20/2013 13:24	11.88	14	123	0	100	48.4	93
02/20/2013 13:25	11.80	12	124	0	100	48.2	87
02/20/2013 13:26	11.96	14	118	0	100	47.8	90
02/20/2013 13:27	12.07	16	116	0	100	49.3	94
02/20/2013 13:28	11.90	36	105	0	100	53.0	90
02/20/2013 13:29	11.52	28	98	0	100	55.4	91
02/20/2013 13:30	11.30	16	104	0	100	55.0	100
02/20/2013 13:31	11.30	29	84	0	100	53.2	100
02/20/2013 13:32	11.19	30	87	0	100	52.8	109
02/20/2013 13:33	11.07	25	95	1	99	52.7	108
02/20/2013 13:34 ✓	11.09	24	96	1	99	52.5	105
02/20/2013 13:35 ✓	11.25	20	102	0	100	51.3	91
<b>Period Average =</b>	11.44	23	103	0	100	50.9	93
<b>Period Max Value =</b>	12.18	56	133	1	100	55.4	109
<b>Period Min Value =</b>	10.44	12	76	0	99	46.5	79
<b>Period Totals =</b>	2.4020E+2	4.8800E+2	2.1550E+3	2.0000E+0	2.0980E+3	1.0681E+3	1.9520E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



**Data Group:** All Data Groups  
**Report Name:** zzU1-Rata  
**Start of Report:** 02/20/2013 13:43  
**End of Report:** 02/20/2013 14:03

**Validation:** Valid Data Only

Group#-Channel#	G1-C6	G4-C9	G4-C2	G4-C3	G4-C7	G1-C18	G4-C6
Long Descrip.	MIR O2	CO	Corr. NOx	Corr. SO2	Corr. SO2 Reduc	SteamLoad	SO2inCorr
Short Descrip.	1-MIR O2	1-CO@7%	1-NOx@7%	1-SO2@7%	1-SO2 Red	1-StmLoad	1-SO2in@7
Units	%	ppm	ppm	ppm	%	klb/hr	ppm
Range	-3-25	0-2100	0-500	0-900	0-100	0-82	0-1500
02/20/2013 13:43	11.72	29	101	0	100	47.5	85
02/20/2013 13:44	12.15	24	118	0	100	47.3	94
02/20/2013 13:45	12.40	21	134	0	100	48.4	92
02/20/2013 13:46	12.07	20	120	0	100	49.8	91
02/20/2013 13:47	11.80	15	118	0	100	50.2	87
02/20/2013 13:48	11.80	14	115	0	100	50.2	89
02/20/2013 13:49	11.80	15	112	0	100	50.6	89
02/20/2013 13:50	11.80	15	113	0	100	50.4	92
02/20/2013 13:51	11.80	17	107	0	100	51.8	94
02/20/2013 13:52	11.72	17	101	0	100	51.7	88
02/20/2013 13:53	11.62	15	111	0	100	50.8	93
02/20/2013 13:54	11.82	23	106	0	100	49.6	90
'20/2013 13:55	11.90	22	113	0	100	48.9	98
02/20/2013 13:56	11.90	36	114	0	100	47.6	91
02/20/2013 13:57	11.90	26	114	0	100	47.3	98
02/20/2013 13:58	11.90	15	117	0	100	47.7	94
02/20/2013 13:59	11.90	14	120	0	100	47.3	90
02/20/2013 14:00	11.99	11	137	0	100	48.7	97
02/20/2013 14:01	11.99	12	123	0	100	49.8	92
02/20/2013 14:02	11.84	14	121	0	100	50.5	85
02/20/2013 14:03	11.83	14	124	0	100	48.9	88
<b>Period Average =</b>	11.89	19	116	0	100	49.3	91
<b>Period Max Value =</b>	12.40	36	137	0	100	51.8	98
<b>Period Min Value =</b>	11.62	11	101	0	100	47.3	85
<b>Period Totals =</b>	2.4965E+2	3.8900E+2	2.4390E+3	0.0000E+0	2.1000E+3	1.0350E+3	1.9170E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

**APPENDIX E**  
**UNIT 2 – COVANTA**  
**CEM & PROCESS DATA**

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups  
**Report Name:** ZZ\_U2RATA  
**Start of Report:** 02/21/2013 07:26  
**End of Report:** 02/21/2013 07:46

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 07:26	11.6	36	152	12	41.3	90	116
02/21/2013 07:27	11.5	35	155	12	38.3	89	111
02/21/2013 07:28	11.9	77	153	8	37.5	93	122
02/21/2013 07:29	12.3	112	155	6	38.3	95	120
02/21/2013 07:30	12.3	99	150	6	38.9	95	123
02/21/2013 07:31	12.4	70	155	7	39.5	94	118
02/21/2013 07:32	12.1	77	160	9	39.3	92	116
02/21/2013 07:33	11.8	50	162	9	39.9	93	125
02/21/2013 07:34	12.0	28	159	9	42.0	93	124
02/21/2013 07:35	11.9	23	159	9	43.1	93	138
02/21/2013 07:36	11.6	48	146	9	42.4	93	137
02/21/2013 07:37	11.4	48	140	10	43.2	93	141
02/21/2013 07:38	11.5	74	142	12	44.6	91	138
02/21/2013 07:39	11.2	109	140	13	44.4	90	129
02/21/2013 07:40	11.1	102	148	16	42.9	88	129
02/21/2013 07:41	11.4	66	151	19	41.7	85	131
02/21/2013 07:42	12.0	41	155	17	43.3	88	139
02/21/2013 07:43	12.2	29	155	16	44.7	89	143
02/21/2013 07:44	11.7	21	159	17	44.4	88	140
02/21/2013 07:45	11.3	38	155	19	43.1	86	135
02/21/2013 07:46	11.3	46	162	20	41.1	86	142
<b>Period Average =</b>	11.7	59	153	12	41.6	91	129
<b>Period Max Value =</b>	12.4	112	162	20	44.7	95	143
<b>Period Min Value =</b>	11.1	21	140	6	37.5	85	111
<b>Period Totals =</b>	2.4650E+2	1.2290E+3	3.2130E+3	2.5500E+2	8.7390E+2	1.9040E+3	2.7170E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** ZZ\_U2RATA

**Start of Report:** 02/21/2013 07:55

**End of Report:** 02/21/2013 08:15

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR 02	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR 02	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 07:55 ✓	10.6	70	135	24	47.4	83	141
02/21/2013 07:56	10.9	114	132	21	47.4	85	142
02/21/2013 07:57	11.1	140	138	43	48.2	71	148
02/21/2013 07:58	10.6	242	135	51	49.3	66	149
02/21/2013 07:59	10.6	190	135	51	49.9	66	149
02/21/2013 08:00	11.0	129	129	58	49.1	59	143
02/21/2013 08:01	11.1	78	128	35	49.4	76	147
02/21/2013 08:02	11.3	74	138	20	49.3	87	151
02/21/2013 08:03	10.7	86	128	12	49.2	92	148
02/21/2013 08:04	10.7	61	129	8	50.4	94	136
02/21/2013 08:05	10.7	57	136	8	50.7	94	128
02/21/2013 08:06	10.4	106	130	9	48.5	93	120
02/21/2013 08:07	10.8	127	133	11	44.1	92	130
02/21/2013 08:08	11.1	203	130	11	43.7	92	137
02/21/2013 08:09	11.3	285	126	12	47.6	91	141
02/21/2013 08:10	11.2	211	118	13	49.1	91	138
02/21/2013 08:11	10.6	297	108	13	50.0	90	129
02/21/2013 08:12	10.5	122	112	16	49.0	87	119
02/21/2013 08:13	10.4	87	109	19	47.7	84	116
02/21/2013 08:14	10.6	53	120	16	46.7	86	116
02/21/2013 08:15 ✓	11.2	20	136	9	47.1	93	122
<b>Period Average =</b>	10.8 ✓	131 ✓	128 ✓	22 ✓	48.3	84	136
<b>Period Max Value =</b>	11.3	297	138	58	50.7	94	151
<b>Period Min Value =</b>	10.4	20	108	8	43.7	59	116
<b>Period Totals =</b>	2.2740E+2	2.7520E+3	2.6850E+3	4.6000E+2	1.0138E+3	1.7720E+3	2.8500E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** ZZ\_U2RATA

**Start of Report:** 02/21/2013 08:23

**End of Report:** 02/21/2013 08:43

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 08:23 ✓	11.4	42	135	4	42.2	97	127
02/21/2013 08:24	11.5	38	139	1	38.1	99	128
02/21/2013 08:25	11.5	31	145	1	40.9	99	132
02/21/2013 08:26	11.2	70	136	6	45.3	95	125
02/21/2013 08:27	11.0	60	131	7	46.8	94	122
02/21/2013 08:28	10.7	59	128	10	46.2	92	121
02/21/2013 08:29	10.8	67	127	10	44.6	92	121
02/21/2013 08:30	11.2	77	138	10	44.6	92	120
02/21/2013 08:31	11.7	115	133	11	46.2	91	122
02/21/2013 08:32	11.4	159	127	12	48.0	92	146
02/21/2013 08:33	10.8	190	122	15	49.0	89	132
02/21/2013 08:34	10.2	181	118	17	48.7	87	129
02/21/2013 08:35	10.5	80	132	19	47.6	85	123
02/21/2013 08:36	11.0	38	143	13	46.9	89	123
02/21/2013 08:37	11.3	43	143	9	47.2	94	140
02/21/2013 08:38	10.9	108	124	7	48.5	95	133
02/21/2013 08:39	10.3	94	114	9	49.9	93	128
02/21/2013 08:40	10.5	57	122	9	51.3	94	139
02/21/2013 08:41	10.3	161	115	13	52.4	92	154
02/21/2013 08:42	9.6	742	93	17	51.2	89	157
02/21/2013 08:43 ✓	9.3	962	83	19	49.2	88	154
<b>Period Average =</b>	10.8 ✓	161 ✓	126 ✓	10 ✓	46.9	92 ✓	132 ✓
<b>Period Max Value =</b>	11.7	962	145	19	52.4	99	157
<b>Period Min Value =</b>	9.3	31	83	1	38.1	85	120
<b>Period Totals =</b>	2.2710E+2	3.3740E+3	2.6480E+3	2.1900E+2	9.8480E+2	1.9380E+3	2.7760E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**Company:**

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



**Data Group:**

All Data Groups

**Report Name:**

ZZ\_U2RATA

**Start of Report:**

02/21/2013 08:50

**End of Report:**

02/21/2013 09:10

**Validation:** Valid Data Only

<b>Group#-Channel#</b>	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
<b>Long Descrip.</b>	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
<b>Short Descrip.</b>	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
<b>Units</b>	%	ppm	ppm	ppm	klb/hr	%	ppm
<b>Range</b>	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500

02/21/2013 08:50 ✓	10.9	265	120	11	43.8	93	152
02/21/2013 08:51	10.9	431	110	11	45.3	93	161
02/21/2013 08:52	10.6	273	101	15	47.0	89	142
02/21/2013 08:53	10.6	190	104	15	46.8	89	142
02/21/2013 08:54	10.7	164	119	16	45.1	88	139
02/21/2013 08:55	10.8	83	129	15	44.4	89	139
02/21/2013 08:56	10.8	61	124	10	44.1	93	144
02/21/2013 08:57	11.1	62	136	7	44.9	95	146
02/21/2013 08:58	11.1	70	136	9	45.6	94	149
02/21/2013 08:59	11.1	60	138	14	44.1	91	151
02/21/2013 09:00	11.1	84	128	16	44.8	90	154
02/21/2013 09:01	10.7	228	108	15	45.2	89	139
02/21/2013 09:02	10.6	185	109	13	44.1	91	145
02/21/2013 09:03	10.9	85	124	8	42.9	94	144
02/21/2013 09:04	11.1	58	135	6	41.8	96	143
02/21/2013 09:05	11.4	35	140	4	41.8	97	140
02/21/2013 09:06	11.6	42	139	6	42.5	95	129
02/21/2013 09:07	11.1	81	130	7	42.5	95	135
02/21/2013 09:08	11.2	89	135	7	42.6	95	149
02/21/2013 09:09	11.4	70	133	7	41.3	95	134
02/21/2013 09:10 ✓	11.7	73	134	9	41.0	93	135

<b>Period Average =</b>	11.0 ✓	128 ✓	125 ✓	11 ✓	43.9	93 ✓	143
<b>Period Max Value =</b>	11.7	431	140	16	47.0	97	161
<b>Period Min Value =</b>	10.6	35	101	4	41.0	88	129
<b>Period Totals =</b>	2.3140E+2	2.6890E+3	2.6320E+3	2.2100E+2	9.2160E+2	1.9440E+3	3.0120E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**Company:**

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



**ca Group:**

All Data Groups

**Report Name:**

ZZ\_U2RATA

**Start of Report:**

02/21/2013 09:19

**End of Report:**

02/21/2013 09:39

**Validation:** Valid Data Only

<b>Group#-Channel#</b>	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
<b>Long Descrip.</b>	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
<b>Short Descrip.</b>	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
<b>Units</b>	%	ppm	ppm	ppm	klb/hr	%	ppm
<b>Range</b>	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 09:19	11.0	97	131	10	43.6	92	124
02/21/2013 09:20	10.9	86	132	11	42.9	91	123
02/21/2013 09:21	11.0	55	135	13	41.6	89	120
02/21/2013 09:22	11.2	39	142	11	42.1	91	126
02/21/2013 09:23	11.2	37	142	11	43.0	92	132
02/21/2013 09:24	10.8	54	139	11	42.7	91	129
02/21/2013 09:25	11.0	94	138	13	42.1	90	127
02/21/2013 09:26	11.6	72	158	10	39.5	92	126
02/21/2013 09:27	11.5	105	152	10	37.3	92	126
02/21/2013 09:28	11.5	72	152	10	36.7	92	130
02/21/2013 09:29	11.8	116	145	12	36.7	90	120
02/21/2013 09:30	12.0	92	142	9	38.8	92	119
02/21/2013 09:31	12.0	62	150	9	43.2	93	122
02/21/2013 09:32	11.5	136	136	7	46.0	94	122
02/21/2013 09:33	10.8	193	121	8	44.2	93	118
02/21/2013 09:34	10.7	83	132	11	42.8	91	122
02/21/2013 09:35	11.1	77	135	10	42.2	92	133
02/21/2013 09:36	11.4	98	133	9	41.6	93	129
02/21/2013 09:37	11.4	88	130	7	40.9	94	124
02/21/2013 09:38	11.7	76	133	5	40.4	96	128
02/21/2013 09:39	11.6	103	124	3	40.8	98	129
<b>Period Average =</b>	11.3 ✓	87 ✓	138 ✓	10 ✓	41.4	92 ✓	125 ✓
<b>Period Max Value =</b>	12.0	193	158	13	46.0	98	133
<b>Period Min Value =</b>	10.7	37	121	3	36.7	89	118
<b>Period Totals =</b>	2.3770E+2	1.8350E+3	2.9020E+3	2.0000E+2	8.6910E+2	1.9380E+3	2.6290E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**Company:**

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



**Data Group:**

All Data Groups

**Report Name:**

ZZ\_U2RATA

**Start of Report:**

02/21/2013 09:46

**End of Report:**

02/21/2013 10:06

**Validation:** Valid Data Only

<b>Group#-Channel#</b>	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
<b>Long Descrip.</b>	MIR 02	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
<b>Short Descrip.</b>	2-MIR 02	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
<b>Units</b>	%	ppm	ppm	ppm	klb/hr	%	ppm
<b>Range</b>	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 09:46	12.5	71	162	2	33.5	98	99
02/21/2013 09:47	12.6	90	161	0	32.8	100	95
02/21/2013 09:48	12.9	125	160	0	33.2	100	110
02/21/2013 09:49	13.0	132	155	0	35.4	100	114
02/21/2013 09:50	12.4	106	141	0	37.1	100	108
02/21/2013 09:51	12.1	74	147	0	38.0	100	111
02/21/2013 09:52	12.3	55	162	0	39.0	100	104
02/21/2013 09:53	12.2	70	155	0	40.8	100	101
02/21/2013 09:54	11.8	58	151	0	41.5	100	106
02/21/2013 09:55	11.5	78	145	1	40.5	99	106
02/21/2013 09:56	11.5	65	146	1	40.3	99	101
02/21/2013 09:57	12.0	50	158	2	41.3	98	106
02/21/2013 09:58	11.9	70	156	2	41.0	98	104
02/21/2013 09:59	11.5	52	154	3	39.1	97	94
02/21/2013 10:00	11.8	57	160	3	37.8	97	95
02/21/2013 10:01	12.4	59	168	0	36.4	100	107
02/21/2013 10:02	12.3	40	163	0	37.0	100	107
02/21/2013 10:03	12.2	67	158	0	39.4	100	105
02/21/2013 10:04	11.9	49	158	0	36.4	100	97
02/21/2013 10:05	11.8	105	151	0	35.7	100	96
02/21/2013 10:06	12.2	102	153	0	35.6	100	93
<b>Period Average =</b>	12.1 ✓	75 ✓	155 ✓	1 ✓	37.7	99 ✓	103 ✓
<b>Period Max Value =</b>	13.0	132	168	3	41.5	100	114
<b>Period Min Value =</b>	11.5	40	141	0	32.8	97	93
<b>Period Totals =</b>	2.5480E+2	1.5750E+3	3.2640E+3	1.4000E+1	7.9180E+2	2.0860E+3	2.1590E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups  
**Report Name:** ZZ\_U2RATA  
**Start of Report:** 02/21/2013 10:13  
**End of Report:** 02/21/2013 10:33

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 10:13 ✓	11.8	84	142	0	40.7	100	98
02/21/2013 10:14	11.6	90	138	0	41.7	100	103
02/21/2013 10:15	11.5	154	140	0	43.4	100	111
02/21/2013 10:16	11.0	239	129	3	44.4	97	113
02/21/2013 10:17	10.6	200	120	3	43.7	97	102
02/21/2013 10:18	10.9	110	124	3	42.5	97	102
02/21/2013 10:19	11.1	109	126	0	42.4	100	100
02/21/2013 10:20	11.1	84	138	1	42.9	99	101
02/21/2013 10:21	11.0	55	140	1	41.5	99	99
02/21/2013 10:22	11.1	37	145	1	39.0	99	95
02/21/2013 10:23	11.4	57	151	1	38.1	99	103
02/21/2013 10:24	11.7	89	141	0	36.3	100	111
02/21/2013 10:25	11.9	110	137	0	36.7	100	109
02/21/2013 10:26	11.9	105	133	0	40.1	100	112
02/21/2013 10:27	11.5	81	127	0	42.1	100	114
02/21/2013 10:28	11.2	56	128	0	43.2	100	110
02/21/2013 10:29	11.3	91	129	0	43.7	100	106
02/21/2013 10:30	11.2	103	130	0	43.9	100	101
02/21/2013 10:31	11.0	139	133	1	44.6	99	107
02/21/2013 10:32	10.9	153	132	4	45.9	96	113
02/21/2013 10:33 ✓	10.6	146	120	7	46.6	94	119
<b>Period Average =</b>	11.3 ✓	109 ✓	133 ✓	1 ✓	42.1	99 ✓	106 ✓
<b>Period Max Value =</b>	11.9	239	151	7	46.6	100	119
<b>Period Min Value =</b>	10.6	37	120	0	36.3	94	95
<b>Period Totals =</b>	2.3630E+2	2.2920E+3	2.8030E+3	2.5000E+1	8.8340E+2	2.0760E+3	2.2290E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
E N E R G Y

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** ZZ\_U2RATA

**Start of Report:** 02/21/2013 10:39

**End of Report:** 02/21/2013 10:59

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 10:39	11.1	64	142	10	42.9	91	106
02/21/2013 10:40	11.2	50	148	9	39.5	91	103
02/21/2013 10:41	11.4	69	145	4	37.7	96	103
02/21/2013 10:42	11.7	57	154	3	37.9	97	112
02/21/2013 10:43	12.0	106	134	0	39.7	100	109
02/21/2013 10:44	11.4	98	133	1	40.2	99	107
02/21/2013 10:45	11.3	55	142	3	41.0	97	106
02/21/2013 10:46	11.4	47	130	1	41.0	99	99
02/21/2013 10:47	11.5	59	136	0	42.6	100	109
02/21/2013 10:48	11.4	116	135	3	45.5	97	110
02/21/2013 10:49	10.7	139	123	7	45.2	93	107
02/21/2013 10:50	10.5	94	127	8	45.7	93	109
02/21/2013 10:51	10.7	117	124	7	45.3	94	110
02/21/2013 10:52	10.5	87	123	7	43.3	94	110
02/21/2013 10:53	10.6	45	130	5	42.0	95	105
02/21/2013 10:54	10.9	43	135	4	42.9	96	112
02/21/2013 10:55	11.0	38	142	4	42.9	96	113
02/21/2013 10:56	10.7	99	132	5	43.0	95	109
02/21/2013 10:57	10.8	95	132	6	42.5	94	105
02/21/2013 10:58	10.7	82	123	5	42.8	95	103
02/21/2013 10:59 ✓	10.8	98	127	6	42.0	94	105
<b>Period Average =</b>	11.1 ✓	79 ✓	134 ✓	5 ✓	42.2	96 ✓	107 ✓
<b>Period Max Value =</b>	12.0	139	154	10	45.7	100	113
<b>Period Min Value =</b>	10.5	38	123	0	37.7	91	99
<b>Period Totals =</b>	2.3230E+2	1.6580E+3	2.8170E+3	9.8000E+1	8.8560E+2	2.0060E+3	2.2520E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** ZZ\_U2RATA

**Start of Report:** 02/21/2013 11:05

**End of Report:** 02/21/2013 11:25

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 11:05✓	11.1	51	140	4	42.2	96	99
02/21/2013 11:06	10.8	87	129	4	42.1	96	98
02/21/2013 11:07	10.9	99	132	4	42.1	96	111
02/21/2013 11:08	11.0	62	136	4	43.8	96	112
02/21/2013 11:09	11.1	54	133	4	45.0	96	108
02/21/2013 11:10	10.7	87	125	5	45.0	95	103
02/21/2013 11:11	10.5	68	138	8	46.4	92	104
02/21/2013 11:12	10.5	107	138	8	46.5	92	103
02/21/2013 11:13	10.3	115	126	8	45.2	92	104
02/21/2013 11:14	10.5	84	123	8	44.2	93	111
02/21/2013 11:15	10.9	47	138	7	44.1	94	113
02/21/2013 11:16	11.0	35	142	8	45.3	93	108
02/21/2013 11:17	10.9	31	138	8	45.1	92	104
02/21/2013 11:18	10.7	37	139	10	44.2	90	101
02/21/2013 11:19	10.8	55	140	10	44.3	93	134
02/21/2013 11:20	10.9	60	138	10	43.7	90	105
02/21/2013 11:21	11.1	68	139	10	44.1	90	104
02/21/2013 11:22	10.8	118	124	8	45.1	92	96
02/21/2013 11:23	10.2	120	118	8	45.2	92	96
02/21/2013 11:24	10.5	52	139	8	44.6	92	99
02/21/2013 11:25✓	10.5	74	132	8	43.7	92	98
<b>Period Average =</b>	10.7✓	72✓	134✓	7✓	44.4	93✓	105✓
<b>Period Max Value =</b>	11.1	120	142	10	46.5	96	134
<b>Period Min Value =</b>	10.2	31	118	4	42.1	90	96
<b>Period Totals =</b>	2.2570E+2	1.5110E+3	2.8070E+3	1.5200E+2	9.3190E+2	1.9540E+3	2.2110E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**Company:**

Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601



**Data Group:**

All Data Groups

**Report Name:**

ZZ\_U2RATA

**Start of Report:**

02/21/2013 11:31

**End of Report:**

02/21/2013 11:51

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 11:31 ✓	10.6	88	127	5	47.7	96	116
02/21/2013 11:32	10.2	152	113	8	46.4	92	98
02/21/2013 11:33	9.9	245	114	9	42.8	90	90
02/21/2013 11:34	10.7	84	143	5	42.4	94	89
02/21/2013 11:35	11.4	40	149	3	42.1	97	89
02/21/2013 11:36	11.6	42	151	1	43.0	99	93
02/21/2013 11:37	11.3	46	146	1	43.5	99	89
02/21/2013 11:38	11.0	46	143	3	43.1	97	87
02/21/2013 11:39	11.1	71	145	4	40.6	95	87
02/21/2013 11:40	11.3	87	136	1	39.0	99	89
02/21/2013 11:41	11.7	112	133	0	40.5	100	89
02/21/2013 11:42	11.8	93	133	0	42.5	100	86
02/21/2013 11:43	11.5	65	136	0	43.0	100	81
02/21/2013 11:44	11.3	58	139	1	43.1	99	76
02/21/2013 11:45	11.2	73	142	1	42.5	99	77
02/21/2013 11:46	11.4	78	148	3	41.7	96	77
02/21/2013 11:47	11.5	89	148	1	42.4	99	94
02/21/2013 11:48	11.2	110	130	0	43.6	100	84
02/21/2013 11:49	10.9	107	131	0	43.7	100	82
02/21/2013 11:50	11.1	58	135	0	43.0	100	72
02/21/2013 11:51 ✓	11.0	37	145	0	42.5	100	76
<b>Period Average =</b>	11.1 ✓	85 ✓	137 ✓	2 ✓	42.8	98 ✓	87 ✓
<b>Period Max Value =</b>	11.8	245	151	9	47.7	100	116
<b>Period Min Value =</b>	9.9	37	113	0	39.0	90	72
<b>Period Totals =</b>	2.3370E+2	1.7810E+3	2.8870E+3	4.6000E+1	8.9910E+2	2.0510E+3	1.8210E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
ENERGY

**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups

**Report Name:** ZZ\_U2RATA

**Start of Report:** 02/21/2013 11:57

**End of Report:** 02/21/2013 12:17

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 11:57✓	11.1	51	133	0	45.1	100	73
02/21/2013 11:58	10.8	36	132	0	43.8	100	70
02/21/2013 11:59	10.9	67	131	0	42.0	100	70
02/21/2013 12:00	11.4	91	142	0	41.6	100	72
02/21/2013 12:01	11.5	241	130	0	43.0	100	73
02/21/2013 12:02	11.3	285	116	0	44.9	100	76
02/21/2013 12:03	11.1	121	129	0	45.4	100	74
02/21/2013 12:04	10.9	124	124	0	44.4	100	75
02/21/2013 12:05	10.8	84	129	0	43.5	100	68
02/21/2013 12:06	11.1	51	139	0	43.6	100	72
02/21/2013 12:07	11.4	209	130	0	42.9	100	73
02/21/2013 12:08	10.9	284	118	0	42.5	100	69
02/21/2013 12:09	11.1	118	136	0	43.1	100	68
02/21/2013 12:10	11.4	108	135	0	44.4	100	76
02/21/2013 12:11	11.1	88	129	0	46.0	100	78
02/21/2013 12:12	10.7	71	123	0	45.3	100	76
02/21/2013 12:13	10.9	75	131	0	45.3	100	74
02/21/2013 12:14	11.0	48	143	0	47.2	100	80
02/21/2013 12:15	10.9	28	136	0	46.4	100	75
02/21/2013 12:16	10.4	45	122	1	43.7	99	72
02/21/2013 12:17✓	10.6	74	116	0	42.3	100	71
<b>Period Average =</b>	11.0 ✓	109 ✓	130 ✓	0 ✓	44.1	100 ✓	73 ✓
<b>Period Max Value =</b>	11.5	285	143	1	47.2	100	80
<b>Period Min Value =</b>	10.4	28	116	0	41.6	99	68
<b>Period Totals =</b>	2.3130E+2	2.2990E+3	2.7240E+3	1.0000E+0	9.2640E+2	2.0990E+3	1.5350E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

# Data Summary Report

**COVANTA**  
E N E R G Y

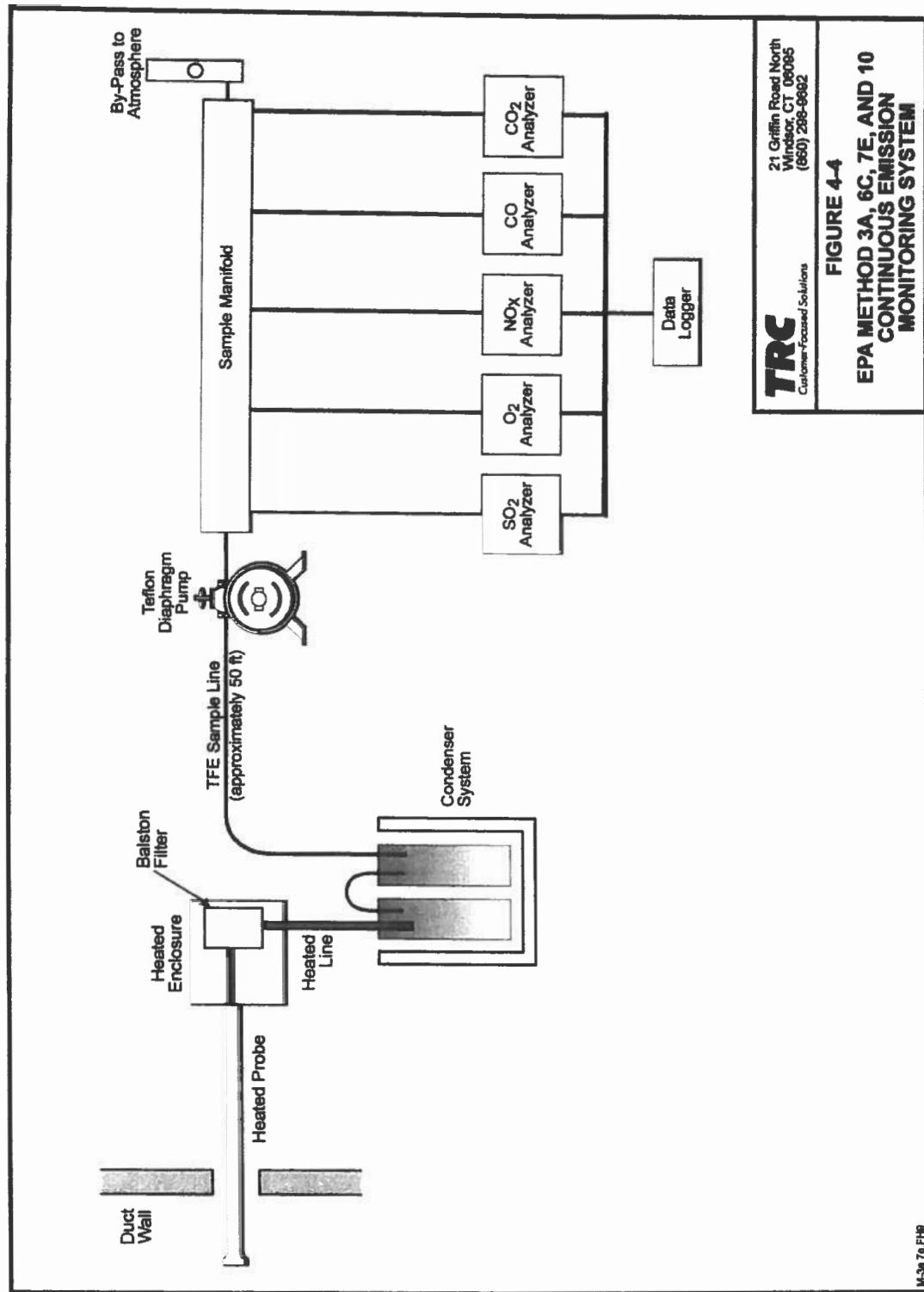
**Company:** Covanta Hudson Valley Renewable  
Dutchess Co. Resource Recovery  
Poughkeepsie, NY 12601

**Data Group:** All Data Groups  
**Report Name:** ZZ\_U2RATA  
**Start of Report:** 02/21/2013 12:23  
**End of Report:** 02/21/2013 12:43

**Validation:** Valid Data Only

Group#-Channel#	G16-C6	G19-C9	G19-C2	G19-C3	G16-C18	G19-C7	G19-C6
Long Descrip.	MIR O2	CO Corr.	NOx Corr.	SO2 Corr.	SteamLoad	SO2 Reduc	SO2inCorr
Short Descrip.	2-MIR O2	2-CO@7%	2-NOx@7%	2-SO2@7%	2-StmLoad	2-SO2 Red	2-SO2in@7
Units	%	ppm	ppm	ppm	klb/hr	%	ppm
Range	-3-25	0-2100	0-500	0-900	0-82	0-100	0-1500
02/21/2013 12:23✓	10.8	80	129	0	44.7	100	73
02/21/2013 12:24	10.7	113	125	0	44.0	100	73
02/21/2013 12:25	10.8	52	139	0	41.6	100	73
02/21/2013 12:26	11.0	45	142	0	41.8	100	73
02/21/2013 12:27	11.0	51	145	0	44.3	100	76
02/21/2013 12:28	10.6	65	135	1	45.6	99	77
02/21/2013 12:29	10.3	101	126	1	46.0	99	79
02/21/2013 12:30	10.6	97	123	1	46.7	99	77
02/21/2013 12:31	10.5	243	104	0	48.6	100	84
02/21/2013 12:32	10.2	305	97	1	51.5	99	86
02/21/2013 12:33	9.6	396	85	4	52.2	95	80
02/21/2013 12:34	9.5	296	98	5	48.7	93	74
02/21/2013 12:35	10.3	70	129	7	46.1	91	77
02/21/2013 12:36	10.9	24	136	10	44.8	88	83
02/21/2013 12:37	11.0	35	125	14	45.1	83	83
02/21/2013 12:38	10.4	37	122	19	43.3	77	82
02/21/2013 12:39	10.5	20	132	20	40.1	75	81
02/21/2013 12:40	10.8	17	140	21	38.8	75	85
02/21/2013 12:41	11.1	18	142	17	38.7	80	85
02/21/2013 12:42	11.2	39	136	6	39.4	93	85
02/21/2013 12:43✓	11.0	84	132	3	39.6	96	82
<b>Period Average =</b>	10.6	104	126	6	44.4	92	79
<b>Period Max Value =</b>	11.2	396	145	21	52.2	100	86
<b>Period Min Value =</b>	9.5	17	85	0	38.7	75	73
<b>Period Totals =</b>	2.2280E+2	2.1880E+3	2.6420E+3	1.3000E+2	9.3160E+2	1.9420E+3	1.6680E+3
<b>Period % Recovery =</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0

**APPENDIX F**  
**SCHEMATICS**



M-3470-FHG

**APPENDIX G**  
**REFERENCE METHOD DAS**

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.1	0.12	0.73	0.57	0.45	0.25	1.04
Zero Bias (%)	0.19	1.18	0.33	0.28	1.11	1.83	0.27
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.04	9.96	88.92	90.69	25.22	10.16	184.62
Span Bias (%)	0.09	-0.85	-0.27	0.16	-1.43	0.11	-0.46
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.11	-0.07	0.19	0.3	0.25	0.17
Zero Bias (%)	1.01	1.11	0.15	0.09	0.79	1.83	0.08
Zero Drift (%)	0.82	-0.06	-0.18	-0.2	-0.32	0	-0.19
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	9.95	10.08	90.08	86.83	25.19	10.01	184.6
Span Bias (%)	-0.3	-0.19	-0.01	-1.84	-1.5	-0.56	-0.47
Span Drift (%)	-0.38	0.67	0.26	-1.99	-0.06	-0.67	0
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	12.87 ✓	7.23 ✓	83.3 ✓	9.17 ✓	-0.26 ✓	11.24 ✓	29.66 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 09:27:22	13.62	6.61	80.09	12.16	0.32	11.93	28.31
20Feb2013 - 09:28:22	14.04	6.25	73.85	16.91	0.16	12.51	24.1
20Feb2013 - 09:29:22	13.76	6.5	75.48	16.62	0.07	12.26	23.08
20Feb2013 - 09:30:22	13.12	7.12	81.86	10.29	0.12	11.48	25.69
20Feb2013 - 09:31:22	13.4	6.92	83.89	7.45	0.34	11.74	26.43
20Feb2013 - 09:32:22	13.5	6.73	78.34	9.46	0.16	11.95	23.9
20Feb2013 - 09:33:22	13.33	6.88	80.58	11.04	0.03	11.68	27.53
20Feb2013 - 09:34:22	12.27	7.85	75.8	15.52	0.31	10.56	34.48
20Feb2013 - 09:35:22	12.29	7.75	81.7	14.7	0.15	10.69	39.58
20Feb2013 - 09:36:22	12.57	7.59	85.12	10.45	0.18	11.08	35.24
20Feb2013 - 09:37:22	12.7	7.4	84.37	7.28	0.04	11.24	30.6
20Feb2013 - 09:38:22	12.95	7.17	83.4	5.62	0.03	11.56	28.72
20Feb2013 - 09:39:22	12.45	7.63	84.66	6.85	0.23	11.02	29.17
20Feb2013 - 09:40:22	12.65	7.46	87.49	7.84	0.13	11.19	31.05
20Feb2013 - 09:41:22	12.82	7.27	87.78	8.31	0.16	11.43	27.46
20Feb2013 - 09:42:22	12.63	7.43	90.11	7.53	0.03	11.23	26.48
20Feb2013 - 09:43:22	12.59	7.49	88.72	6.26	0.02	11.16	28.49
20Feb2013 - 09:44:22	12.27	7.7	89.05	4.65	-0.03	10.77	30.59
20Feb2013 - 09:45:22	12.25	7.79	88.51	4.63	0.09	10.79	30.96
20Feb2013 - 09:46:22	12.03	7.96	82.23	6.61	0	10.51	33.04
20Feb2013 - 09:47:22	11.52	8.17	81.99	7.18	0.05	10.44	39.18
Average	12.8	7.32	83.1	9.4	0.12	11.29	29.72

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.11	-0.07	0.19	0.3	0.25	0.17
Zero Bias (%)	1.01	1.11	0.15	0.09	0.79	1.83	0.08
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	9.95	10.08	90.08	86.83	25.19	10.01	184.6
Span Bias (%)	-0.3	-0.19	-0.01	-1.84	-1.5	-0.56	-0.47
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.35	0.42	0.09	0.1	0.2	0.99
Zero Bias (%)	1.09	2.49	0.26	0.03	0.37	1.6	0.26
Zero Drift (%)	0.08	1.37	0.11	-0.05	-0.42	-0.23	0.18
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	9.93	10.01	90.75	87.24	25.1	10.08	185.99
Span Bias (%)	-0.4	-0.56	0.13	-1.62	-1.69	-0.22	-0.16
Span Drift (%)	-0.11	-0.37	0.15	0.21	-0.19	0.34	0.31
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.86 ✓	8.08 ✓	81.21 ✓	10.36 ✓	-0.27 ✓	10.02 ✓	23.83 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 09:58:05	11.96	7.96	80.67	7.5	0.56	10.18	21.63
20Feb2013 - 09:59:05	11.91	8.12	79.37	7.52	0.53	10.16	22.76
20Feb2013 - 10:00:05	11.8	8.15	77.46	8.45	0.29	9.97	22.56
20Feb2013 - 10:01:05	11.75	8.26	74.06	11.02	0.53	9.88	23.58
20Feb2013 - 10:02:05	11.4	8.55	84.65	14.78	0.39	9.37	25.23
20Feb2013 - 10:03:05	11.22	8.74	87.29	10.21	0.25	9.46	27.28
20Feb2013 - 10:04:05	11.33	8.65	83.78	8.82	0	9.53	27.71
20Feb2013 - 10:05:05	11.35	8.63	86.82	8.88	-0.04	9.61	27.67
20Feb2013 - 10:06:05	11.1	8.81	86.29	8.95	-0.1	9.42	27.19
20Feb2013 - 10:07:05	10.88	8.94	82.38	12.98	-0.27	9.02	27.78
20Feb2013 - 10:08:05	11.53	8.36	79.54	13.7	-0.19	9.85	27.46
20Feb2013 - 10:09:05	12.46	7.6	83.67	11.14	-0.27	10.92	21.52
20Feb2013 - 10:10:05	12.38	7.73	89.97	8.4	-0.23	10.93	18.99
20Feb2013 - 10:11:05	12.49	7.58	86.65	7.1	-0.27	11.06	18.78
20Feb2013 - 10:12:05	12.23	7.81	83.55	7.61	-0.34	10.72	19.84
20Feb2013 - 10:13:05	12.03	7.96	80.3	7.51	-0.33	10.45	20.62
20Feb2013 - 10:14:05	12.23	7.75	80.12	8	-0.44	10.65	22
20Feb2013 - 10:15:05	11.96	8.06	85.26	7.66	-0.39	10.37	21.67
20Feb2013 - 10:16:05	11.44	8.45	77.45	15.32	-0.49	9.74	24.42
20Feb2013 - 10:17:05	11.14	8.34	75.47	14.68	-0.32	9.82	27.45
20Feb2013 - 10:18:05	11.61	7.99	73.73	12.99	-0.25	10.07	29.03
Average	11.72	8.21	81.83	10.15	-0.06	10.06	24.06

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC357704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.35	0.42	0.09	0.1	0.2	0.99
Zero Bias (%)	1.09	2.49	0.26	0.03	0.37	1.6	0.26
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	9.83	10.01	90.75	87.24	25.1	10.08	185.99
Span Bias (%)	-0.4	-0.56	0.13	-1.62	-1.69	-0.22	-0.16
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.14	0.39	0.07	-0.02	0.28	0.44
Zero Bias (%)	1.05	1.3	0.25	0.03	0.1	1.94	0.14
Zero Drift (%)	-0.04	-1.19	-0.01	-0.01	-0.26	0.34	-0.12
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.16	90.84	87.13	25.04	10.03	184.36
Span Bias (%)	0.18	0.3	0.15	-1.68	-1.81	-0.45	-0.52
Span Drift (%)	0.58	0.85	0.02	-0.06	-0.12	-0.22	-0.36
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.36 ✓	8.5 ✓	69.89 ✓	19.83 ✓	-0.49 ✓	9.45 ✓	34.17 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 10:26:17	11.37	8.69	77.85	8.48	-0.26	9.48	26.68
20Feb2013 - 10:27:17	10.96	8.98	62.66	11.57	-0.27	8.96	27.44
20Feb2013 - 10:28:17	11.35	8.64	75.76	13.57	-0.18	9.42	26.56
20Feb2013 - 10:29:17	11.1	8.92	64.09	10.91	-0.16	9.11	26.92
20Feb2013 - 10:30:17	11.1	8.85	67.34	19.69	-0.43	9.03	35.66
20Feb2013 - 10:31:17	11.3	8.63	69.71	19.73	-0.38	9.43	34.08
20Feb2013 - 10:32:17	10.94	8.95	68.14	15.42	-0.42	8.98	37.66
20Feb2013 - 10:33:17	11.19	8.77	74.68	12.54	-0.39	9.33	38.24
20Feb2013 - 10:34:17	11.59	8.45	78.44	8.51	-0.36	10	31.81
20Feb2013 - 10:35:17	11.37	8.55	71.13	9.9	-0.49	9.68	31.17
20Feb2013 - 10:36:17	11.66	8.27	70.23	13	-0.59	10.01	32.29
20Feb2013 - 10:37:17	11.83	8.24	72.88	17.45	-0.41	10.24	34.98
20Feb2013 - 10:38:17	11.84	8.1	74.3	12.04	-0.61	10.22	34.86
20Feb2013 - 10:39:17	11.74	8.2	71.85	10.33	-0.58	10.11	32.42
20Feb2013 - 10:40:17	11.3	8.57	72.18	12.12	-0.63	9.54	36.24
20Feb2013 - 10:41:17	10.88	8.97	70.41	16.93	-0.64	9.04	38.49
20Feb2013 - 10:42:17	11.44	8.48	71.2	12.33	-0.64	9.67	36.69
20Feb2013 - 10:43:17	11.23	8.66	76.93	11.04	-0.6	9.46	33.6
20Feb2013 - 10:44:17	10.8	9.23	60.87	34.03	-0.37	9.11	38.25
20Feb2013 - 10:45:17	11.01	9	67.89	55.96	-0.45	9.25	42.92
20Feb2013 - 10:46:17	11.32	8.69	68.19	79.71	-0.44	9.62	44
Average	11.3	8.66	70.8	19.3	-0.44	9.51	34.34

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.14	0.39	0.07	-0.02	0.28	0.44
Zero Bias (%)	1.05	1.3	0.25	0.03	0.1	1.94	0.14
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.16	90.84	87.13	25.04	10.03	184.36
Span Bias (%)	0.18	0.3	0.15	-1.68	-1.81	-0.45	-0.52
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.11	0.6	0.09	-0.04	0.21	0.14
Zero Bias (%)	1.06	1.11	0.3	0.03	0.07	1.64	0.07
Zero Drift (%)	0.01	-0.19	0.05	0.01	-0.03	-0.3	-0.07
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.27	90.81	88.7	24.93	10.32	182.93
Span Bias (%)	0.2	0.93	0.15	-0.87	-2.05	0.86	-0.84
Span Drift (%)	0.03	0.63	-0.01	0.81	-0.24	1.31	-0.32
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	12.05 ✓	7.7 ✓	78.5 ✓	10.92 ✓	0.09 ✓	10.1 ✓	31.06 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 10:54:18	12.38	7.6	79.41	13.33	1.42	10.53	27.92
20Feb2013 - 10:55:18	11.94	8.06	76.21	11.2	1.14	10.15	29.46
20Feb2013 - 10:56:18	11.95	7.98	72.98	10.5	0.51	10.02	30.69
20Feb2013 - 10:57:18	11.86	8.1	73.27	12.41	0.53	9.99	32.13
20Feb2013 - 10:58:18	12.04	7.9	78.32	9.49	0.25	10.19	29.53
20Feb2013 - 10:59:18	12.2	7.83	66.29	13.73	0.04	10.3	29.89
20Feb2013 - 11:00:18	12.21	7.86	84.12	10.77	0.07	10.38	29.83
20Feb2013 - 11:01:18	12.06	7.95	83.86	8.61	0.03	10.15	33.71
20Feb2013 - 11:02:18	11.87	8.13	80.1	11.03	0.08	9.9	35.48
20Feb2013 - 11:03:18	12.08	7.96	89.14	10.87	0.47	10.16	39
20Feb2013 - 11:04:18	12.04	7.99	85.11	7.72	0	10.28	33.23
20Feb2013 - 11:05:18	12.01	7.98	81.07	7.75	-0.25	10.22	29.18
20Feb2013 - 11:06:18	11.83	8.17	86.14	7.7	-0.18	10.22	29.21
20Feb2013 - 11:07:18	12.33	7.77	80.04	11.54	-0.31	10.58	28.31
20Feb2013 - 11:08:18	12.49	7.61	83.05	11.3	-0.32	10.89	26.38
20Feb2013 - 11:09:18	12.17	7.77	83.42	10.31	-0.46	10.51	27.45
20Feb2013 - 11:10:18	11.7	8.22	85.73	14.59	-0.49	9.87	35.94
20Feb2013 - 11:11:18	11.94	7.99	83.77	9.22	-0.38	10.23	33.38
20Feb2013 - 11:12:18	11.77	8.31	71.93	10.86	-0.18	10.18	30.92
20Feb2013 - 11:13:18	12.18	7.81	75.51	11.79	-0.44	10.51	26.6
20Feb2013 - 11:14:18	11.93	7.71	69.97	11.15	-0.36	10.26	25.7
Average	12.05	7.94	79.5	10.76	0.06	10.26	30.66

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
<b>Zero ID</b>							
<b>Zero Expiration</b>							
<b>Low ID</b>							
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<b>Calibration Error</b>							
Zero Response	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Error (%)	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<b>Initial Bias</b>							
Zero Response	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Bias (%)	0.29	0.11	0.6	0.09	-0.04	0.21	0.14
Span Concentration	1.06	1.11	0.3	0.03	0.07	1.64	0.07
Span Response	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Bias (%)	10.06	10.27	90.81	88.7	24.93	10.32	182.93
<b>Final Bias &amp; Drift</b>							
Zero Response	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Bias (%)	0.27	0.17	0.52	0.55	-0.24	0.28	0.31
Zero Drift (%)	1	1.45	0.28	0.27	-0.35	1.98	0.11
Span Concentration	-0.06	0.33	-0.02	0.24	-0.42	0.34	0.04
Span Response	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Bias (%)	10.06	10.26	89.26	85.13	24.98	10.41	188.91
Span Drift (%)	0.2	0.85	-0.2	-2.72	-1.95	1.27	0.49
<b>Results</b>							
Corrected Averages	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
	11.75 ✓	7.92 ✓	74.51 ✓	12.38 ✓	-0.31 ✓	9.67 ✓	28.23 ✓
<b>Log Averages</b>							
20Feb2013 - 11:22:07	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 11:23:07	11.58	8.4	69.14	19.86	-0.43	9.77	22.8
20Feb2013 - 11:24:07	12.33	7.8	61.64	21.29	-0.29	10.45	21.74
20Feb2013 - 11:25:07	12.65	7.44	78.45	14.56	-0.48	10.88	17.1
20Feb2013 - 11:26:07	11.87	8.08	82.42	10.09	-0.44	10.02	19.69
20Feb2013 - 11:27:07	11.69	8.29	84.29	7.77	-0.43	9.72	24.19
20Feb2013 - 11:28:07	11.38	8.56	68.69	9.01	-0.36	9.22	27.84
20Feb2013 - 11:29:07	11.69	8.24	66.89	10.42	-0.15	9.85	28.05
20Feb2013 - 11:30:07	12.01	7.98	68.26	12	-0.35	10.41	25.27
20Feb2013 - 11:31:07	11.68	8.29	71.55	12.85	-0.38	10.04	25.62
20Feb2013 - 11:32:07	11.39	8.5	65.54	14.83	-0.52	9.72	31.49
20Feb2013 - 11:33:07	11.68	8.19	76.86	11.84	-0.59	10.17	29.25
20Feb2013 - 11:34:07	11.33	8.6	67.49	13.77	-0.55	9.61	31.34
20Feb2013 - 11:35:07	11.96	8.05	81.59	10.64	-0.54	10.31	30.34
20Feb2013 - 11:36:07	12.08	7.97	77.94	9.67	-0.52	10.53	25.66
20Feb2013 - 11:37:07	11.79	8.2	79.17	8.58	-0.45	10.28	26
20Feb2013 - 11:38:07	11.83	8.18	76.34	9.17	-0.42	10.16	28.93
20Feb2013 - 11:39:07	11.67	8.28	71.07	13.8	-0.42	9.99	32.29
20Feb2013 - 11:40:07	11.84	8.09	74.79	13.01	-0.46	10.17	35.32
20Feb2013 - 11:41:07	11.73	8.22	84.97	11.11	-0.53	10.02	32.91
20Feb2013 - 11:42:07	11.22	8.72	78.64	12.06	-0.43	9.28	37.23
Average	11.61	8.34	85.98	10.88	-0.48	9.8	38.82
	11.76	8.21	74.84	12.25	-0.44	10.02	28.18

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.27	0.17	0.52	0.55	-0.24	0.28	0.31
Zero Bias (%)	1	1.45	0.28	0.27	-0.35	1.98	0.11
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.26	89.26	85.13	24.98	10.41	188.91
Span Bias (%)	0.2	0.85	-0.2	-2.72	-1.95	1.27	0.49
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.23	0.14	0.32	0.02	-0.48	0.24	0.38
Zero Bias (%)	0.8	1.29	0.24	0	-0.87	1.78	0.12
Zero Drift (%)	-0.2	-0.16	-0.04	-0.27	-0.52	-0.2	0.02
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.07	10.16	89.64	87.33	24.46	10.01	183.55
Span Bias (%)	0.26	0.3	-0.11	-1.58	-3.04	-0.56	-0.7
Span Drift (%)	0.06	-0.56	0.08	1.14	-1.1	-1.83	-1.18
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.48 ✓	8.18 ✓	65.67 ✓	48.82 ✓	0.36 ✓	8.73 ✓	55.44 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 11:50:03	11.44	8.48	72.33	12.52	0.81	8.66	48.93
20Feb2013 - 11:51:03	11.6	8.34	73.57	26.03	0.44	8.96	48.14
20Feb2013 - 11:52:03	11.9	8.07	72.38	13.09	0.42	9.41	41.46
20Feb2013 - 11:53:03	12.05	7.91	80.41	8.07	0.21	9.59	40.34
20Feb2013 - 11:54:03	12.13	7.84	74.12	8.43	0.11	9.65	39.91
20Feb2013 - 11:55:03	11.84	8.15	64.41	13.03	0.2	9.26	48.06
20Feb2013 - 11:56:03	12.17	7.8	71.49	14.35	0.28	9.68	48.11
20Feb2013 - 11:57:03	12.33	7.75	79.4	13.09	0.35	9.99	41.84
20Feb2013 - 11:58:03	11.58	8.32	71.65	8.98	0.01	9.09	45.42
20Feb2013 - 11:59:03	11.28	8.67	69.46	9.77	-0.06	8.76	53.99
20Feb2013 - 12:00:03	11.35	8.56	69.13	13.36	-0.22	8.84	55.88
20Feb2013 - 12:01:03	11.69	8.28	73.31	13.37	-0.16	9.39	48.18
20Feb2013 - 12:02:03	11.89	8.06	66.4	12.68	-0.22	9.59	46.59
20Feb2013 - 12:03:03	11.74	8.19	70.82	12.54	-0.3	9.4	46.82
20Feb2013 - 12:04:03	11.38	8.52	69.29	12.19	-0.4	8.81	54.93
20Feb2013 - 12:05:03	10.93	8.99	56.82	45.68	-0.26	8.24	70.74
20Feb2013 - 12:06:03	10.67	9.14	48.13	65.8	-0.36	7.67	78.67
20Feb2013 - 12:07:03	11.32	8.55	60.2	96.75	-0.32	8.5	72.83
20Feb2013 - 12:08:03	10.72	9.24	44.47	122.51	-0.23	8.07	72.97
20Feb2013 - 12:09:03	10.58	9.35	39.06	352.15	-0.29	7.85	83.77
20Feb2013 - 12:10:03	11.16	8.81	49.96	111.84	-0.17	8.37	73.87
Average	11.51	8.43	65.56	46.96	-0.01	8.94	55.31

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.23	0.14	0.32	0.02	-0.48	0.24	0.38
Zero Bias (%)	0.8	1.29	0.24	0	-0.87	1.78	0.12
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.07	10.16	89.64	87.33	24.46	10.01	183.55
Span Bias (%)	0.26	0.3	-0.11	-1.58	-3.04	-0.56	-0.7
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.08	0.42	0.06	0.27	0.3	0.45
Zero Bias (%)	1.06	0.93	0.26	0.02	0.73	2.05	0.14
Zero Drift (%)	0.26	-0.36	0.02	0.02	1.6	0.27	0.02
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.1	10.1	90.43	89.11	25.32	9.94	186.18
Span Bias (%)	0.35	-0.04	0.06	-0.66	-1.22	-0.88	-0.12
Span Drift (%)	0.1	-0.33	0.17	0.92	1.83	-0.32	0.58
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.4 ✓	8.3 ✓	63.57 ✓	22.1 ✓	0.12 ✓	8.86 ✓	55.37 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 12:20:04	11.61	8.31	65.04	12.85	2.15	9.23	44.4
20Feb2013 - 12:21:04	11.84	8.12	62.92	16.2	0.91	9.43	43.78
20Feb2013 - 12:22:04	11.53	8.44	71.08	16.56	0.49	9	43.02
20Feb2013 - 12:23:04	11.6	8.38	77.22	10.28	0.15	8.86	47.71
20Feb2013 - 12:24:04	11.91	8.16	70.01	9.59	0.38	9.59	43.88
20Feb2013 - 12:25:04	11.59	8.43	62.16	15.89	0.25	9.25	46.47
20Feb2013 - 12:26:04	11.1	8.83	55.56	17.76	0.02	8.51	55.94
20Feb2013 - 12:27:04	11.35	8.56	60.43	35.28	-0.23	8.56	64.92
20Feb2013 - 12:28:04	11.63	8.38	60.86	19.69	-0.11	9.1	55.27
20Feb2013 - 12:29:04	11.81	8.14	58.36	17.75	-0.21	9.33	49.75
20Feb2013 - 12:30:04	12.2	7.79	70.12	15.95	-0.3	9.83	44.21
20Feb2013 - 12:31:04	11.96	8.07	72.27	12.37	-0.2	9.61	43.54
20Feb2013 - 12:32:04	11.43	8.53	70.57	11.09	-0.31	8.89	48.84
20Feb2013 - 12:33:04	11.45	8.53	62.83	12.58	-0.43	8.89	58.49
20Feb2013 - 12:34:04	11.09	8.86	56.13	17.96	-0.4	8.48	60.85
20Feb2013 - 12:35:04	10.86	9.11	55.52	26.52	-0.31	8.2	68.64
20Feb2013 - 12:36:04	10.72	9.14	56.35	34.32	-0.43	7.86	71.8
20Feb2013 - 12:37:04	10.93	8.91	61.84	33.57	-0.37	8.1	68.42
20Feb2013 - 12:38:04	11.26	8.78	65.11	60.28	-0.23	8.64	62.9
20Feb2013 - 12:39:04	11.08	8.97	68.35	23.36	-0.22	8.41	64.31
20Feb2013 - 12:40:04	11.57	7.66	58.8	36.26	-0.28	8.36	65.43
Average	11.45	8.48	63.88	21.72	0.01	8.86	54.88

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.08	0.42	0.06	0.27	0.3	0.45
Zero Bias (%)	1.06	0.93	0.26	0.02	0.73	2.05	0.14
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.1	10.1	90.43	89.11	25.32	9.94	186.18
Span Bias (%)	0.35	-0.04	0.06	-0.66	-1.22	-0.88	-0.12
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.17	0.39	0	-0.14	0.29	0.11
Zero Bias (%)	1.03	1.48	0.25	0	-0.14	2.02	0.06
Zero Drift (%)	-0.03	0.56	-0.01	0	-0.87	-0.04	-0.08
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.04	10.12	88.93	88.8	24.45	10.05	184.97
Span Bias (%)	0.1	0.07	-0.27	-0.82	-3.07	-0.38	-0.38
Span Drift (%)	-0.26	0.11	-0.33	-0.16	-1.85	0.5	-0.27
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.47 ✓	9.21 ✓	55.74 ✓	99.34 ✓	-0.03 ✓	8.54 ✓	72.52 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 12:48:05	10.8	9.13	74.47	21.45	0.85	8.75	64.66
20Feb2013 - 12:49:05	10.95	9	71.09	14.31	0.6	8.89	62.33
20Feb2013 - 12:50:05	11.02	8.93	67.17	15.7	0.35	9.02	59.59
20Feb2013 - 12:51:05	10.59	9.33	64.64	15.18	0.09	8.37	61.09
20Feb2013 - 12:52:05	10.35	9.58	53.52	33.72	0.2	8.2	67.41
20Feb2013 - 12:53:05	10.44	9.6	55.21	66.74	0.54	8.45	72.39
20Feb2013 - 12:54:05	10.19	9.64	50.28	63.15	0.07	7.95	73.37
20Feb2013 - 12:55:05	9.72	10.07	41.85	191.37	-0.05	7.4	81.03
20Feb2013 - 12:56:05	10.53	9.41	53.09	311.1	-0.22	8.49	80.33
20Feb2013 - 12:57:05	10.3	9.53	51.65	119.48	-0.37	8.35	65.91
20Feb2013 - 12:58:05	10.36	9.56	53.07	103.15	-0.24	8.51	69.54
20Feb2013 - 12:59:05	10.49	9.44	53.22	53.56	-0.21	8.61	69.92
20Feb2013 - 13:00:05	10.17	9.63	52.9	71.62	-0.18	8.3	73.25
20Feb2013 - 13:01:05	10.47	9.53	49.68	159.84	-0.08	8.61	83.16
20Feb2013 - 13:02:05	10.87	9.03	49.35	76.02	-0.24	9.13	74.74
20Feb2013 - 13:03:05	9.85	9.91	47.99	148.97	-0.2	8.03	81.25
20Feb2013 - 13:04:05	10.08	9.67	45.1	428.84	-0.31	8.13	100.44
20Feb2013 - 13:05:05	10.69	9.22	58.93	112.96	0.01	8.86	85.07
20Feb2013 - 13:06:05	10.75	9.16	58.95	28.95	0.12	9.06	70.84
20Feb2013 - 13:07:05	11.25	8.7	56.36	15.12	0.06	9.59	58.98
20Feb2013 - 13:08:05	11.02	8.88	64.27	13.38	-0.07	9.32	55.68
Average	10.52	9.38	55.85	98.31	0.03	8.57	71.95

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.17	0.39	0	-0.14	0.29	0.11
Zero Bias (%)	1.03	1.48	0.25	0	-0.14	2.02	0.06
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.04	10.12	88.93	88.8	24.45	10.05	184.97
Span Bias (%)	0.1	0.07	-0.27	-0.82	-3.07	-0.38	-0.38
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.02	0.35	0.63	0.04	0.26	0.24
Zero Bias (%)	1.07	0.63	0.24	0.31	0.24	1.87	0.09
Zero Drift (%)	0.04	-0.85	-0.01	0.31	0.38	-0.15	0.03
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.05	10.14	89.51	88.59	24.88	9.98	185.13
Span Bias (%)	0.16	0.15	-0.14	-0.93	-2.16	-0.71	-0.35
Span Drift (%)	0.06	0.07	0.13	-0.11	0.91	-0.33	0.04
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.29 ✓	8.44 ✓	69.65 ✓	14.67 ✓	0.3 ✓	9.39 ✓	77.71 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 13:16:08	11.01	8.9	62.8	34.85	-0.18	8.92	79.69
20Feb2013 - 13:17:08	10.97	8.86	62.99	12.29	-0.2	8.75	75.42
20Feb2013 - 13:18:08	10.86	9.04	66.35	13.08	0	8.79	75.79
20Feb2013 - 13:19:08	11.1	8.78	59.4	14.45	-0.08	8.9	79.97
20Feb2013 - 13:20:08	11.4	8.55	62.78	22.86	0.28	9.29	79.42
20Feb2013 - 13:21:08	11.64	8.32	73.73	15.22	0.26	9.51	70.5
20Feb2013 - 13:22:08	12.24	7.77	84.97	8.73	0.25	10.14	62.53
20Feb2013 - 13:23:08	11.73	8.24	77.74	8.52	0.27	9.75	63.83
20Feb2013 - 13:24:08	11.42	8.47	74.26	10.26	0.02	9.62	73.79
20Feb2013 - 13:25:08	11.61	8.29	83.36	8.06	-0.19	9.82	73.13
20Feb2013 - 13:26:08	12.07	7.9	75.82	7.48	-0.02	10.31	70.46
20Feb2013 - 13:27:08	11.68	8.29	71.85	8.93	0.18	10.07	65.5
20Feb2013 - 13:28:08	11.48	8.4	72.43	9.87	-0.03	9.73	68.04
20Feb2013 - 13:29:08	10.76	9.09	62.39	25.25	0.29	8.87	79.57
20Feb2013 - 13:30:08	11.22	8.7	70.27	14.49	0.31	9.42	77.69
20Feb2013 - 13:31:08	11.04	8.82	62.93	9.87	0.26	9.21	74.99
20Feb2013 - 13:32:08	10.72	9.15	55.58	22.8	0.51	9.09	84.39
20Feb2013 - 13:33:08	10.63	9.24	63.6	18.14	0.43	8.84	87.39
20Feb2013 - 13:34:08	11.1	8.82	66.59	17.42	0.85	9.39	93.98
20Feb2013 - 13:35:08	11.13	8.76	70.48	15.04	1.05	9.5	90.4
20Feb2013 - 13:36:08	11.38	8.59	75.39	11.95	0.79	9.72	86.14
Average	11.29	8.62	69.32	14.74	0.24	9.41	76.79

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.89	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.05	-0.09	-0.75	0.02	-0.07	-0.15	-0.17
Zero Error (%)	0.24	-0.5	-0.16	0.01	-0.15	-0.69	-0.04
Low Response	0	0	90.15				
Low Error (%)	0	0	0.09				
Mid Response	10.02	10.11	187.41	90.38	25.9	10.13	186.71
Mid Error (%)	0.04	0.95	-0.02	0.26	0.69	0.56	-0.18
High Response	22	17.76	451.25	193.23	47.32	21.98	452.62
High Error (%)	0.13	0.39	-0.3	-0.19	0.27	0.03	0.07
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.02	0.35	0.63	0.04	0.26	0.24
Zero Bias (%)	1.07	0.63	0.24	0.31	0.24	1.87	0.09
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.05	10.14	89.51	88.59	24.88	9.98	185.13
Span Bias (%)	0.16	0.15	-0.14	-0.93	-2.16	-0.71	-0.35
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.29	0.19	0.34	0.17	0.34	0.29	0.86
Zero Bias (%)	1.06	1.56	0.24	0.08	0.87	2.01	0.23
Zero Drift (%)	0	0.93	0	-0.24	0.63	0.14	0.14
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.07	10.13	89.61	85.62	24.4	10.02	184.42
Span Bias (%)	0.24	0.11	-0.12	-2.46	-3.17	-0.52	-0.5
Span Drift (%)	0.08	-0.04	0.02	-1.54	-1.02	0.19	-0.16
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	12.17 ✓	7.67 ✓	70.07 ✓	10.47 ✓	0.96 ✓	9.91 ✓	67.62 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
20Feb2013 - 13:44:21	12.89	7.18	66.49	15.93	2.35	10.81	57.61
20Feb2013 - 13:45:21	12.35	7.63	78.11	10.99	1.96	10.15	56.56
20Feb2013 - 13:46:21	11.83	8.16	69.07	13.16	1.82	9.5	67.6
20Feb2013 - 13:47:21	12.04	7.98	71.34	9.25	1.55	9.72	69.35
20Feb2013 - 13:48:21	12.04	7.95	69.43	9.54	1.66	9.79	68.02
20Feb2013 - 13:49:21	12.11	7.92	67.05	7.88	1.55	9.8	63.97
20Feb2013 - 13:50:21	12.03	7.97	69.27	9.32	1.62	9.76	66.75
20Feb2013 - 13:51:21	11.93	8.06	66.59	9.18	1.46	9.79	64.77
20Feb2013 - 13:52:21	11.85	8.04	60.93	9.83	0.87	9.51	69.55
20Feb2013 - 13:53:21	12.05	7.92	69.8	9.62	0.7	9.83	71.69
20Feb2013 - 13:54:21	12.11	7.87	62.56	9.89	0.68	9.85	65.38
20Feb2013 - 13:55:21	12.21	7.82	67.92	13.13	0.58	10.01	67.21
20Feb2013 - 13:56:21	12.11	7.9	68.68	11.67	0.5	9.85	66.86
20Feb2013 - 13:57:21	12.11	7.89	68.51	24.86	0.66	9.77	72.33
20Feb2013 - 13:58:21	12.18	7.78	71.44	9.68	0.46	9.73	69.24
20Feb2013 - 13:59:21	12.35	7.67	69.63	8.66	0.65	9.97	71.9
20Feb2013 - 14:00:21	12.24	7.81	82.38	7	0.93	10.08	66.43
20Feb2013 - 14:01:21	12.06	7.99	75.51	5.8	0.81	9.85	68.1
20Feb2013 - 14:02:21	11.96	8.06	69.6	7.97	0.94	9.54	75.36
20Feb2013 - 14:03:21	12.54	7.59	76.65	6.91	0.88	10.25	68.17
20Feb2013 - 14:04:21	12.63	7.46	68.99	10.36	0.6	10.45	60.05
Average	12.17	7.84	70	10.51	1.11	9.91	66.99

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351495	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	QC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.23	0.17	0.73	0.11	0.9	0.33	1.3
Zero Bias (%)	0.53	-0.19	0.03	0.19	3.06	0.97	0.28
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.01	9.92	91.17	87.55	24.29	10.17	190.29
Span Bias (%)	-0.3	-1.6	-0.32	-1.55	-0.97	0.45	0.44
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.21	0.49	0.09	0.01	0.29	0.86
Zero Bias (%)	0.65	0.04	-0.02	0.18	1.18	0.78	0.18
Zero Drift (%)	0.12	0.22	-0.05	-0.01	-1.88	-0.19	-0.1
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.18	9.93	90.26	88.15	25.16	10.09	184.55
Span Bias (%)	0.5	-1.52	-0.52	-1.25	0.87	0.07	-0.82
Span Drift (%)	0.8	0.07	-0.2	0.31	1.84	-0.37	-1.27
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	12.02 ✓	7.85 ✓	91.77 ✓	29.18 ✓	7.15 ✓	9.91 ✓	99.6 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 07:27:08	11.93	8.06	98.69	16.29	7.77	9.97	93.21
21Feb2013 - 07:28:08	12.46	7.6	91.98	29.55	6.66	10.73	81.34
21Feb2013 - 07:29:08	12.67	7.4	88.83	47.89	5.72	10.82	78.37
21Feb2013 - 07:30:08	12.65	7.39	83.22	59.79	5.87	10.81	86.73
21Feb2013 - 07:31:08	12.68	7.36	88.22	39.21	5.98	10.72	84.09
21Feb2013 - 07:32:08	12.27	7.74	91.19	28.64	6.55	10.33	90.06
21Feb2013 - 07:33:08	12.17	7.77	95.81	26.17	5.76	10.17	87.52
21Feb2013 - 07:34:08	12.41	7.6	94.68	13.19	5.01	10.26	86.8
21Feb2013 - 07:35:08	11.91	8	94.38	13.63	4.71	9.86	98.03
21Feb2013 - 07:36:08	11.72	8.21	92.65	19.26	5.03	9.63	104.12
21Feb2013 - 07:37:08	11.77	8.19	88.35	30.19	5.73	9.81	111.66
21Feb2013 - 07:38:08	11.74	8.18	86.58	26.09	5.9	9.62	110.7
21Feb2013 - 07:39:08	11.39	8.5	89	45.36	6.71	9.23	116.61
21Feb2013 - 07:40:08	11.65	8.23	94.98	71.22	7.45	9.66	113.01
21Feb2013 - 07:41:08	12.02	7.87	92.46	29.87	8.12	9.94	101.03
21Feb2013 - 07:42:08	12.56	7.47	92.37	22.61	8.54	10.38	99.57
21Feb2013 - 07:43:08	12.12	7.81	87.36	20.12	8.38	9.96	104.18
21Feb2013 - 07:44:08	11.67	8.22	97.42	11.64	9.09	9.47	112.28
21Feb2013 - 07:45:08	11.47	8.36	98.42	17.84	10.03	9.27	119.83
21Feb2013 - 07:46:08	11.88	8.01	103.47	15.97	11.2	9.76	114.38
21Feb2013 - 07:47:08	12.47	7.57	97.6	15.79	11.77	10.41	107.83
Average	12.08	7.88	92.75	28.59	7.24	10.04	100.06

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.21	0.49	0.09	0.01	0.29	0.86
Zero Bias (%)	0.65	0.04	-0.02	0.18	1.18	0.78	0.18
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.18	9.93	90.26	88.15	25.16	10.09	184.55
Span Bias (%)	0.5	-1.52	-0.52	-1.25	0.87	0.07	-0.82
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.23	0.3	0.01	0.27	0.3	0.5
Zero Bias (%)	0.75	0.15	-0.06	0.14	1.74	0.82	0.1
Zero Drift (%)	0.1	0.11	-0.04	-0.04	0.55	0.04	-0.08
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.12	90.23	87.82	24.92	9.97	183.31
Span Bias (%)	-0.06	-0.45	-0.53	-1.42	0.36	-0.49	-1.1
Span Drift (%)	-0.56	1.08	-0.01	-0.17	-0.5	-0.56	-0.27
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.66 ✓	8.89 ✓	87.3 ✓	91.71 ✓	15.52 ✓	9.13 ✓	120.13 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 07:56:02	11	8.79	90.28	62.63	16.37	9.33	121.6
21Feb2013 - 07:57:02	10.81	8.94	90.77	84.19	18.11	9.07	118.29
21Feb2013 - 07:58:02	10.47	9.23	95.72	108.02	41.43	8.69	126.05
21Feb2013 - 07:59:02	10.58	9.19	95.84	167.66	29.47	8.8	129.82
21Feb2013 - 08:00:02	10.94	8.82	87.45	140.12	41.66	9.01	126.9
21Feb2013 - 08:01:02	11.05	8.68	86.29	63.01	35.79	9.27	125.52
21Feb2013 - 08:02:02	11.16	8.57	91.12	46.43	17.45	9.59	118.06
21Feb2013 - 08:03:02	10.29	9.42	88.38	37.6	10.39	8.66	128.95
21Feb2013 - 08:04:02	10.78	8.96	91.58	46.78	7.09	9.29	130.62
21Feb2013 - 08:05:02	10.27	9.4	93.24	37.38	5.46	8.53	129.88
21Feb2013 - 08:06:02	10.39	9.31	97.51	45.02	5.75	8.87	122.99
21Feb2013 - 08:07:02	10.89	8.85	91.59	98.61	6.31	9.45	110.07
21Feb2013 - 08:08:02	11.29	8.55	87.21	101.03	6.79	10.04	102.61
21Feb2013 - 08:09:02	11.25	8.58	81.41	160.27	7.69	9.93	107.76
21Feb2013 - 08:10:02	10.81	8.92	79.13	171.36	8.96	9.18	115.12
21Feb2013 - 08:11:02	10.33	9.36	74.37	194.92	10.72	8.77	126.68
21Feb2013 - 08:12:02	10.54	9.19	80.58	190.34	11.57	9.06	123.13
21Feb2013 - 08:13:02	10.17	9.54	74.89	56.26	12.64	8.73	116.54
21Feb2013 - 08:14:02	10.67	9.13	83.84	43.57	12.31	9.28	106.81
21Feb2013 - 08:15:02	11.28	8.56	89.6	19.35	8.76	9.66	95.53
21Feb2013 - 08:16:02	10.93	8.91	92.88	10.62	5.56	9.43	96.82
Average	10.76	9	87.79	89.77	15.25	9.17	118.08

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.28	0.23	0.3	0.01	0.27	0.3	0.5
Zero Bias (%)	0.75	0.15	-0.06	0.14	1.74	0.82	0.1
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.12	90.23	87.82	24.92	9.97	183.31
Span Bias (%)	-0.06	-0.45	-0.53	-1.42	0.36	-0.49	-1.1
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.09	0.35	0.81	0.09	0.37	1.39
Zero Bias (%)	0.62	-0.67	-0.05	0.55	1.35	1.12	0.3
Zero Drift (%)	-0.13	-0.82	0.01	0.41	-0.39	0.3	0.2
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.15	10.04	90.49	88.26	24.94	9.99	183.66
Span Bias (%)	0.36	-0.93	-0.47	-1.19	0.42	-0.37	-1.02
Span Drift (%)	0.42	-0.48	0.06	0.23	0.05	0.11	0.08
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.5 ✓	9.03 ✓	84.03 ✓	127.41 ✓	7.99 ✓	8.96 ✓	119.72 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 08:24:07	11.46	8.43	86.53	21.57	5.65	9.83	103.74
21Feb2013 - 08:25:07	11.31	8.63	93.37	19.16	4.6	9.6	107.14
21Feb2013 - 08:26:07	10.98	8.86	90.2	26.56	4.31	9.11	111.48
21Feb2013 - 08:27:07	10.81	9.05	86.3	61.22	5.08	9	114.18
21Feb2013 - 08:28:07	10.5	9.32	89.82	29.83	6.25	8.74	112.12
21Feb2013 - 08:29:07	10.93	8.83	86.6	55.93	6.72	9.24	105.67
21Feb2013 - 08:30:07	11.44	8.46	90.69	54.9	6.99	10.05	101.5
21Feb2013 - 08:31:07	11.67	8.19	81.88	50.5	6.69	10.2	91.98
21Feb2013 - 08:32:07	11.05	8.72	80.53	113.91	7.08	9.49	98.2
21Feb2013 - 08:33:07	10.14	9.5	84.86	153.44	8.81	8.42	114.75
21Feb2013 - 08:34:07	10.12	9.53	83.64	252.47	11.94	8.52	132.92
21Feb2013 - 08:35:07	10.66	9.14	94.04	103.88	12.54	9.22	118.92
21Feb2013 - 08:36:07	11.03	8.78	98.11	32.81	9.72	9.61	111.74
21Feb2013 - 08:37:07	11.16	8.74	95.05	21.87	6.86	9.74	104.95
21Feb2013 - 08:38:07	10.18	9.54	83.98	73.58	6.12	8.54	113.7
21Feb2013 - 08:39:07	10.17	9.56	81.67	101.38	6.54	8.65	130.02
21Feb2013 - 08:40:07	10.51	9.24	86.48	63.69	6.74	9	118.69
21Feb2013 - 08:41:07	9.92	9.71	82.31	59.6	7.48	8.21	119.64
21Feb2013 - 08:42:07	9.11	10.4	73.38	342.09	9.38	7.4	142.33
21Feb2013 - 08:43:07	9.23	10.29	62.12	500.26	12.87	7.66	160.94
21Feb2013 - 08:44:07	9.92	9.72	65.74	478.56	13.8	8.15	152.96
Average	10.59	9.17	84.62	124.63	7.91	8.97	117.5

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.09	0.35	0.81	0.09	0.37	1.39
Zero Bias (%)	0.62	-0.67	-0.05	0.55	1.35	1.12	0.3
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.15	10.04	90.49	88.26	24.94	9.99	183.66
Span Bias (%)	0.36	-0.93	-0.47	-1.19	0.42	-0.37	-1.02
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.23	-0.1	-0.3	0.04	0.12	0.29	0.15
Zero Bias (%)	0.57	-1.74	-0.2	0.15	1.42	0.78	0.02
Zero Drift (%)	-0.06	-1.08	-0.14	-0.4	0.06	-0.34	-0.27
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.04	10.02	90.76	91.26	24.78	9.97	183.39
Span Bias (%)	-0.15	-1.04	-0.41	0.36	0.07	-0.49	-1.08
Span Drift (%)	-0.51	-0.11	0.06	1.55	-0.35	-0.11	-0.06
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.33 ✓	8.39 ✓	79.12 ✓	117.32 ✓	8.2 ✓	9.26 ✓	130.07 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 08:51:04	10.79	8.83	71.67	425.53	10.74	8.81	129.57
21Feb2013 - 08:52:04	10.79	8.9	66.42	465.94	10.77	8.75	144.96
21Feb2013 - 08:53:04	10.91	8.96	68.47	215.35	11.87	8.8	145.64
21Feb2013 - 08:54:04	11.12	8.66	75.38	184.7	11.53	8.98	130.05
21Feb2013 - 08:55:04	11.21	8.62	84.74	109.51	10.03	8.87	128.06
21Feb2013 - 08:56:04	11.29	8.58	80.55	37.57	8.12	9.1	128.21
21Feb2013 - 08:57:04	11.5	8.42	85.87	44.54	6.18	9.39	123.13
21Feb2013 - 08:58:04	11.49	8.42	86.94	26.6	5.06	9.27	127.52
21Feb2013 - 08:59:04	11.48	8.45	86.62	25.12	6.71	9.25	131.5
21Feb2013 - 09:00:04	11.3	8.6	82.85	44.14	9.52	8.88	136.03
21Feb2013 - 09:01:04	10.88	8.99	71.75	114.23	10.47	8.65	142.68
21Feb2013 - 09:02:04	10.96	8.89	69.02	320.88	10.95	8.79	141
21Feb2013 - 09:03:04	11.63	8.26	80.7	92.89	8.35	9.69	122.97
21Feb2013 - 09:04:04	11.51	8.38	82.69	40.61	5.43	9.24	124.86
21Feb2013 - 09:05:04	12	7.93	87.5	22.54	4.16	9.74	122.79
21Feb2013 - 09:06:04	11.52	8.38	83.2	24.92	5	9.31	121.36
21Feb2013 - 09:07:04	11.42	8.43	83.7	41.85	5.98	9.36	122.2
21Feb2013 - 09:08:04	11.61	8.24	84.86	79.43	6.11	9.58	112.05
21Feb2013 - 09:09:04	12.07	7.82	84.49	51.17	6.27	10.09	113.29
21Feb2013 - 09:10:04	12.23	7.67	78.29	44.52	7.49	10.26	117.89
21Feb2013 - 09:11:04	11.66	8.23	82.04	45.58	8.28	9.61	112.78
Average	11.4	8.46	79.89	117.03	8.05	9.26	127.55

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.23	-0.1	-0.3	0.04	0.12	0.29	0.15
Zero Bias (%)	0.57	-1.74	-0.2	0.15	1.42	0.78	0.02
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.04	10.02	90.76	91.26	24.78	9.97	183.39
Span Bias (%)	-0.15	-1.04	-0.41	0.36	0.07	-0.49	-1.08
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.3	-0.05	0.11	0.05	0.34	0.28	0.26
Zero Bias (%)	0.85	-1.45	-0.1	0.16	1.88	0.73	0.05
Zero Drift (%)	0.29	0.3	0.09	0	0.47	-0.05	0.02
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.15	10.01	90.36	89.1	24.86	10.09	183.86
Span Bias (%)	0.36	-1.08	-0.5	-0.75	0.24	0.07	-0.98
Span Drift (%)	0.51	-0.04	-0.09	-1.12	0.18	0.56	0.1
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.37 ✓	8.31 ✓	87.8 ✓	55.38 ✓	7.3 ✓	9.7 ✓	105.65 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 09:20:02	11.14	8.6	84.44	72.9	6.9	8.92	113.82
21Feb2013 - 09:21:02	11.46	8.35	89.61	43.67	7.64	9.45	108.42
21Feb2013 - 09:22:02	11.57	8.24	89.66	29.88	7.55	9.58	104
21Feb2013 - 09:23:02	11.39	8.39	90.14	19.21	7.08	9.2	103.41
21Feb2013 - 09:24:02	11.02	8.8	93.72	19.5	7.56	8.8	111.99
21Feb2013 - 09:25:02	11.56	8.2	89.38	45.6	7.92	9.63	113.16
21Feb2013 - 09:26:02	12.07	7.75	96.51	58.6	7.81	10.15	101.36
21Feb2013 - 09:27:02	11.58	8.25	95.99	51.73	7.57	9.53	106.53
21Feb2013 - 09:28:02	11.85	7.97	95.1	61.97	7.21	10.02	106.08
21Feb2013 - 09:29:02	12.06	7.77	91.71	34.22	6.86	10.58	99.62
21Feb2013 - 09:30:02	11.96	7.9	83.59	68.06	7.35	10.39	94.37
21Feb2013 - 09:31:02	11.86	8	90.7	37.19	7.57	10.19	90.34
21Feb2013 - 09:32:02	11.04	8.75	90.65	47.14	7.19	9.28	93.21
21Feb2013 - 09:33:02	10.46	9.18	81.18	141.98	7.05	8.62	108.13
21Feb2013 - 09:34:02	10.93	8.76	91.15	115.42	7.2	9.23	105.41
21Feb2013 - 09:35:02	11.22	8.54	93.35	33.55	6.97	9.8	99.85
21Feb2013 - 09:36:02	11.38	8.45	86.41	59.77	6.99	10.05	99.13
21Feb2013 - 09:37:02	11.26	8.52	84.93	68.59	7.3	10.06	109.16
21Feb2013 - 09:38:02	11.7	8.13	86.35	49.81	7.41	10.49	101.14
21Feb2013 - 09:39:02	11.46	8.31	76.6	51.15	6.72	10.17	100.01
21Feb2013 - 09:40:02	11.02	8.74	79.15	57.28	6.35	10.13	105.51
Average	11.43	8.36	88.59	55.58	7.25	9.73	103.55

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.3	-0.05	0.11	0.05	0.34	0.28	0.26
Zero Bias (%)	0.85	-1.45	-0.1	0.16	1.88	0.73	0.05
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.15	10.01	90.36	89.1	24.86	10.09	183.86
Span Bias (%)	0.36	-1.08	-0.5	-0.75	0.24	0.07	-0.98
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.24	0.06	0.16	0.31	0.11	0.28	0.27
Zero Bias (%)	0.6	-0.85	-0.09	0.29	1.4	0.73	0.05
Zero Drift (%)	-0.26	0.59	0.01	0.13	-0.49	0	0
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.08	10.04	91.45	87.97	24.76	10.24	184.18
Span Bias (%)	0.04	-0.93	-0.26	-1.34	0.03	0.75	-0.91
Span Drift (%)	-0.32	0.15	0.24	-0.59	-0.22	0.67	0.07
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.95 ✓	7.76 ✓	91.18 ✓	41.19 ✓	3.94 ✓	10.75 ✓	76.83 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 09:47:07	12.6	7.29	90.97	43.88	5.68	11.19	72.42
21Feb2013 - 09:48:07	12.99	7.03	86.68	56.79	4.92	11.64	66.45
21Feb2013 - 09:49:07	12.68	7.32	83.16	83.15	4.36	11.19	64.24
21Feb2013 - 09:50:07	11.96	7.83	79.71	66.29	3.95	10.61	78.15
21Feb2013 - 09:51:07	12.09	7.72	86.33	46.24	3.93	10.97	80.6
21Feb2013 - 09:52:07	12.22	7.59	96.2	27.11	3.65	11.05	77.34
21Feb2013 - 09:53:07	11.82	8.05	92.26	27.09	3.76	10.65	79.5
21Feb2013 - 09:54:07	11.61	8.22	94.27	32.4	3.8	10.41	78.1
21Feb2013 - 09:55:07	11.38	8.35	92.63	21.53	3.63	10.19	78.51
21Feb2013 - 09:56:07	11.55	8.26	93.71	42.23	3.95	10.46	82.71
21Feb2013 - 09:57:07	12.02	7.82	96	25.38	3.97	10.8	79.04
21Feb2013 - 09:58:07	11.54	8.24	96.89	33.59	3.94	10.35	78.05
21Feb2013 - 09:59:07	11.35	8.44	98.78	44.95	4.21	10.2	85.23
21Feb2013 - 10:00:07	12.16	7.73	99.56	22.63	4.25	11.26	77.82
21Feb2013 - 10:01:07	12.29	7.59	98.18	25.55	3.73	11.28	67.28
21Feb2013 - 10:02:07	12.14	7.71	96.59	25	3.48	10.96	70.05
21Feb2013 - 10:03:07	11.78	8.06	92.4	36.34	3.6	10.69	77.87
21Feb2013 - 10:04:07	11.58	8.25	98.19	33.92	3.96	10.5	80.7
21Feb2013 - 10:05:07	12	7.81	92.74	39.21	3.87	11.13	77.25
21Feb2013 - 10:06:07	12.29	7.63	89.98	56.76	3.96	11.39	69.36
21Feb2013 - 10:07:07	12.5	7.39	84.09	63.96	3.69	11.92	66.02
Average	12.03	7.83	92.35	40.67	4.01	10.9	75.56

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9168595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.24	0.06	0.16	0.31	0.11	0.28	0.27
Zero Bias (%)	0.5	-0.85	-0.09	0.29	1.4	0.73	0.05
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.08	10.04	91.45	87.97	24.76	10.24	184.18
Span Bias (%)	0.04	-0.93	-0.26	-1.34	0.03	0.75	-0.91
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.15	0.12	0.53	0.09	0.75	0.34	0.95
Zero Bias (%)	0.18	-0.48	-0.01	0.18	2.75	1.01	0.2
Zero Drift (%)	-0.41	0.37	0.08	-0.11	1.36	0.28	0.15
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.08	10.01	90.72	86.8	24.98	10.08	184.58
Span Bias (%)	0.03	-1.08	-0.42	-1.94	0.49	0	-0.82
Span Drift (%)	0	-0.15	-0.16	-0.6	0.47	-0.75	0.09
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.24 ✓	8.4 ✓	83.4 ✓	82.13 ✓	2.53 ✓	9.3 ✓	87 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 10:14:16	11.74	8.11	83.17	57.84	4.57	9.78	73.58
21Feb2013 - 10:15:16	11.46	8.3	85.41	87.02	3.98	9.3	76.27
21Feb2013 - 10:16:16	10.86	8.81	82.54	145.55	4.09	8.53	86.06
21Feb2013 - 10:17:16	11.03	8.72	80.51	254.87	4.68	8.91	94.19
21Feb2013 - 10:18:16	11.39	8.39	80.11	95.36	4.85	9.34	90.46
21Feb2013 - 10:19:16	11.37	8.45	80.25	73.48	4.69	9.31	83.54
21Feb2013 - 10:20:16	11.2	8.59	88.9	73.2	3.49	9.08	82.89
21Feb2013 - 10:21:16	11.34	8.44	93.05	37.9	2.11	9.26	82.52
21Feb2013 - 10:22:16	11.41	8.43	93.45	19.57	2	9.34	81.22
21Feb2013 - 10:23:16	11.96	7.86	96.14	21.53	1.82	10.01	76.6
21Feb2013 - 10:24:16	11.95	7.91	83.78	49.86	1.75	9.98	74.65
21Feb2013 - 10:25:16	12.34	7.56	80.42	58.11	1.61	10.42	79.17
21Feb2013 - 10:26:16	11.87	8.03	76.56	75.46	1.64	9.87	84.2
21Feb2013 - 10:27:16	11.56	8.22	76.96	43.91	1.67	9.46	88.67
21Feb2013 - 10:28:16	11.1	8.66	83.92	28.44	1.92	9.42	96.83
21Feb2013 - 10:29:16	11.02	8.74	82.84	54.27	2.11	9.22	91.02
21Feb2013 - 10:30:16	10.86	8.91	86.32	64.7	2.23	9.23	88.93
21Feb2013 - 10:31:16	10.89	8.8	90.9	97.49	2.34	9.48	87.42
21Feb2013 - 10:32:16	10.48	9.13	88.96	132.94	2.4	9.42	88.23
21Feb2013 - 10:33:16	10.47	9.26	83.08	97.69	2.78	9.49	94.7
21Feb2013 - 10:34:16	10.98	8.8	80.63	108.01	3.03	9.81	102.42
Average	11.3	8.48	84.66	79.87	2.85	9.46	85.88

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XCO01760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.15	0.12	0.53	0.09	0.75	0.34	0.95
Zero Bias (%)	0.18	-0.48	-0.01	0.18	2.75	1.01	0.2
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.08	10.01	90.72	86.8	24.98	10.08	184.58
Span Bias (%)	0.03	-1.08	-0.42	-1.94	0.49	0	-0.82
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.24	0.07	0.37	0.09	0.87	0.28	0.13
Zero Bias (%)	0.61	-0.78	-0.05	0.18	3.02	0.75	0.02
Zero Drift (%)	0.43	-0.3	-0.04	0	0.26	-0.26	-0.18
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.11	9.98	88.84	87.83	24.32	9.85	188.51
Span Bias (%)	0.16	-1.26	-0.83	-1.41	-0.91	-1.03	0.05
Span Drift (%)	0.12	-0.19	-0.42	0.53	-1.4	-1.03	0.87
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.83 ✓	8.76 ✓	89.76 ✓	51.54 ✓	2.43 ✓	9.94 ✓	86.07 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 10:40:14	11.06	8.65	101.12	42.21	3.28	9.47	81.75
21Feb2013 - 10:41:14	11.36	8.38	92.22	44.66	3.56	9.69	79.1
21Feb2013 - 10:42:14	11.95	7.86	98.54	34.14	3.14	10.84	73.2
21Feb2013 - 10:43:14	11.43	8.32	78.47	56.19	2.72	10.68	75.4
21Feb2013 - 10:44:14	11.09	8.63	84.88	63.6	2.72	10.56	84.51
21Feb2013 - 10:45:14	11.23	8.64	94.36	35.84	2.71	10.73	81.92
21Feb2013 - 10:46:14	11.24	8.69	82.49	21.67	2.7	10.64	81.07
21Feb2013 - 10:47:14	11.4	8.42	85.61	32.66	2.54	10.97	77.76
21Feb2013 - 10:48:14	10.85	8.86	89.99	37.26	2.55	10.45	77.26
21Feb2013 - 10:49:14	10.15	9.52	81.61	118.04	3.07	9.88	89.73
21Feb2013 - 10:50:14	10.57	9.11	90.81	58.28	3.54	9.79	87.42
21Feb2013 - 10:51:14	10.47	9.19	86.39	69.25	3.41	8.87	90.65
21Feb2013 - 10:52:14	10.28	9.36	85.73	85.92	3.19	8.92	97.19
21Feb2013 - 10:53:14	10.69	9.08	92.57	34.67	3.38	9.51	94.74
21Feb2013 - 10:54:14	11.02	8.79	91.85	27.46	3.31	9.86	89.17
21Feb2013 - 10:55:14	10.75	8.95	97.55	19.8	3.12	9.41	86.52
21Feb2013 - 10:56:14	10.67	9.05	92.22	38.7	3.28	9.44	97.05
21Feb2013 - 10:57:14	10.67	9.05	92.09	74.5	3.27	9.39	94.48
21Feb2013 - 10:58:14	10.53	9.29	84.4	46.94	3.25	9.35	91.95
21Feb2013 - 10:59:14	10.81	8.93	86.66	66.71	3.01	9.47	87.99
21Feb2013 - 11:00:14	10.7	8.36	95.95	43.87	2.91	9.87	85.52
Average	10.9	8.81	89.79	50.11	3.08	9.89	85.92

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.24	0.07	0.37	0.09	0.87	0.28	0.13
Zero Bias (%)	0.61	-0.78	-0.05	0.18	3.02	0.75	0.02
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.11	9.98	88.84	87.83	24.32	9.85	188.51
Span Bias (%)	0.16	-1.26	-0.83	-1.41	-0.91	-1.03	0.05
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.19	0.09	0.19	0.13	0.27	1.03
Zero Bias (%)	0.64	-0.07	-0.11	0.23	1.43	0.68	0.22
Zero Drift (%)	0.03	0.71	-0.06	0.05	-1.59	-0.06	0.2
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.05	9.99	90.3	86.04	24.84	9.83	186.07
Span Bias (%)	-0.09	-1.19	-0.51	-2.33	0.2	-1.12	-0.49
Span Drift (%)	-0.24	0.07	0.32	-0.92	1.1	-0.09	-0.54
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.46 ✓	9.12 ✓	89.91 ✓	47.76 ✓	4.09 ✓	9.04 ✓	90.03 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 11:06:17	10.66	9.08	88.15	46.37	3.43	9	84.48
21Feb2013 - 11:07:17	10.84	8.93	90.77	51.27	3.2	9.25	80.63
21Feb2013 - 11:08:17	10.93	8.86	92.51	51.19	3.11	8.89	83.22
21Feb2013 - 11:09:17	10.7	9.09	89.42	27.52	3.08	9.32	93.81
21Feb2013 - 11:10:17	10.34	9.36	84.36	53.11	3.2	9.03	96.3
21Feb2013 - 11:11:17	10.5	9.3	100.86	41.83	3.33	9.36	91.11
21Feb2013 - 11:12:17	10.12	9.56	97.59	51.28	3.26	8.85	88.69
21Feb2013 - 11:13:17	10.35	9.34	89.95	105.4	3.79	9.04	90.31
21Feb2013 - 11:14:17	10.67	9.11	86.89	53.51	4.76	9.55	87.58
21Feb2013 - 11:15:17	10.82	8.98	94.4	29.46	4.79	9.51	85.92
21Feb2013 - 11:16:17	10.8	8.98	98.18	23.42	5.04	9.65	92.5
21Feb2013 - 11:17:17	10.54	9.22	92.74	20.04	5.38	9.4	92.93
21Feb2013 - 11:18:17	10.59	9.13	98.99	20.66	5.43	9.39	91.49
21Feb2013 - 11:19:17	10.73	9.1	96.77	20.86	5.4	9.73	85.82
21Feb2013 - 11:20:17	10.91	8.84	93.64	34.09	5.27	9.74	93.19
21Feb2013 - 11:21:17	10.92	8.81	93.56	36.87	5.62	9.6	97.53
21Feb2013 - 11:22:17	10.16	9.52	84.13	76.15	5.45	8.86	88.93
21Feb2013 - 11:23:17	10.17	9.5	84.81	105.08	4.99	9	89.78
21Feb2013 - 11:24:17	10.48	9.2	101.64	52.85	4.38	9.22	79.88
21Feb2013 - 11:25:17	9.94	8.99	91.33	36.97	4.73	9.4	80.07
21Feb2013 - 11:26:17	9.9	9.73	33.52	33.52	3.73	1.45	120.7
Average	10.53	9.17	89.72	46.26	4.35	8.92	90.23

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.19	0.09	0.19	0.13	0.27	1.03
Zero Bias (%)	0.64	-0.07	-0.11	0.23	1.43	0.68	0.22
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.05	9.99	90.3	86.04	24.84	9.83	186.07
Span Bias (%)	-0.09	-1.19	-0.51	-2.33	0.2	-1.12	-0.49
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.3	0.08	0.34	0.24	0.13	0.29	0.47
Zero Bias (%)	0.88	-0.82	-0.05	0.25	1.44	0.78	0.09
Zero Drift (%)	0.24	-0.74	0.05	0.03	0.01	0.09	-0.12
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	9.96	90.18	85.25	25.04	10.06	185.77
Span Bias (%)	-0.04	-1.37	-0.54	-2.74	0.62	-0.07	-0.55
Span Drift (%)	0.04	-0.19	-0.03	-0.41	0.42	1.05	-0.07
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.97 ✓	8.73 ✓	90.84 ✓	59.79 ✓	2.05 ✓	9.8 ✓	70.64 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 11:32:06	9.75	9.8	82.79	71.79	3.1	7.86	96.92
21Feb2013 - 11:33:06	9.99	9.62	81.34	204.62	3.67	8.29	105.24
21Feb2013 - 11:34:06	11.25	8.54	101.57	131.25	3.44	9.73	81.64
21Feb2013 - 11:35:06	11.3	8.53	97.88	29.84	2.87	9.52	71.36
21Feb2013 - 11:36:06	11.34	8.45	95.79	19.81	2.53	9.99	68.31
21Feb2013 - 11:37:06	10.89	8.87	95.69	31.67	2.44	9.58	70.75
21Feb2013 - 11:38:06	10.94	8.78	96.67	27.4	2.3	9.65	74.11
21Feb2013 - 11:39:06	10.97	8.88	97.81	25.86	2.39	10.03	70.53
21Feb2013 - 11:40:06	11.34	8.5	89.37	43.53	2.4	10.35	67.39
21Feb2013 - 11:41:06	11.61	8.24	81.92	61.85	2.01	10.22	65.91
21Feb2013 - 11:42:06	11.54	8.28	81.95	75.74	1.74	10.32	66.38
21Feb2013 - 11:43:06	11.15	8.68	83.95	51.08	1.83	9.91	67.88
21Feb2013 - 11:44:06	11.05	8.78	90.92	37.97	1.85	9.83	66.57
21Feb2013 - 11:45:06	11.07	8.76	93.21	31.94	1.86	10	63.81
21Feb2013 - 11:46:06	11.44	8.33	95.3	46.14	1.58	10.35	58.84
21Feb2013 - 11:47:06	11.26	8.53	98.14	37.57	1.51	10.21	57.86
21Feb2013 - 11:48:06	10.78	9.01	84.47	70.47	1.64	9.58	63.92
21Feb2013 - 11:49:06	10.82	8.9	85.27	95.69	1.44	9.75	72.86
21Feb2013 - 11:50:06	10.77	9.03	90.12	50.64	1.42	9.67	68.02
21Feb2013 - 11:51:06	10.97	8.83	97.26	28.84	1.3	10	64.45
21Feb2013 - 11:52:06	10.66	8.99	96.62	24.23	1.13	9.65	57.93
Average	11	8.78	91.34	57.04	2.12	9.74	70.51

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.3	0.06	0.34	0.24	0.13	0.29	0.47
Zero Bias (%)	0.88	-0.82	-0.05	0.25	1.44	0.78	0.09
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	9.96	90.18	85.25	25.04	10.06	185.77
Span Bias (%)	-0.04	-1.37	-0.54	-2.74	0.62	-0.07	-0.55
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.27	0.17	0.07	0.48	0.29	0.31	0.71
Zero Bias (%)	0.74	-0.22	-0.11	0.38	1.78	0.87	0.15
Zero Drift (%)	-0.14	0.59	-0.06	0.12	0.34	0.09	0.05
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.02	91.25	86.95	24.52	10.15	185.94
Span Bias (%)	-0.06	-1.04	-0.3	-1.87	-0.48	0.34	-0.52
Span Drift (%)	-0.02	0.33	0.24	0.87	-1.1	0.41	0.04
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	11.24 ✓	8.45 ✓	81.72 ✓	77.73 ✓	0.36 ✓	9.01 ✓	61.41 ✓
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 11:58:05	10.6	8.82	89.47	26.2	1.38	8.8	61.78
21Feb2013 - 11:59:05	11.3	8.49	84.04	30.25	1.15	9.37	61.22
21Feb2013 - 12:00:05	11.93	7.87	86.85	51.27	0.79	10.05	55.37
21Feb2013 - 12:01:05	11.49	8.35	82.64	85.24	0.62	9.41	55.87
21Feb2013 - 12:02:05	11.44	8.36	68.4	220.58	0.5	9.26	58.42
21Feb2013 - 12:03:05	11.24	8.55	82.68	144.67	0.41	9	61.48
21Feb2013 - 12:04:05	11.14	8.64	77.58	77.71	0.42	8.91	62.75
21Feb2013 - 12:05:05	11.13	8.64	83.94	67.71	0.51	8.9	62.81
21Feb2013 - 12:06:05	11.62	8.21	89.38	40.37	0.57	9.52	61.55
21Feb2013 - 12:07:05	11.49	8.33	81.92	46.67	0.45	9.34	56.35
21Feb2013 - 12:08:05	10.84	9	72.45	234.79	0.44	8.7	61.33
21Feb2013 - 12:09:05	11.71	8.1	87.72	164.67	0.28	9.78	60.53
21Feb2013 - 12:10:05	11.66	8.19	81.38	57.54	0.24	9.61	55.28
21Feb2013 - 12:11:05	11.05	8.71	81.38	49.06	0.23	8.77	58.24
21Feb2013 - 12:12:05	11.12	8.62	82.65	40.22	0.41	8.8	65.06
21Feb2013 - 12:13:05	11.09	8.68	82.22	59.16	0.61	9	66.74
21Feb2013 - 12:14:05	11.24	8.57	91.57	43.06	0.62	9.23	63.7
21Feb2013 - 12:15:05	10.89	8.82	92.43	23.02	0.54	8.56	63.02
21Feb2013 - 12:16:05	10.64	9.15	84.98	19.38	0.73	8.56	69.64
21Feb2013 - 12:17:05	11.06	8.65	76.03	49.75	0.48	9	64.82
21Feb2013 - 12:18:05	11.93	7.97	75.19	33.35	0.32	9.1	60.69
Average	11.27	8.51	82.61	74.51	0.56	9.13	61.27

<u>Cylinder Gas</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero ID							
Zero Expiration							
Low ID			SG9136171				
Low Expiration			41650				
Low Concentration	0	0	89.75				
Mid ID	CC408903	CC408903	CC351496	SG9136171	SG9169595	CC408903	CC411594
Mid Expiration	7/5/2015	7/5/2015	5/16/2014	1/14/2014	4/18/2014	7/5/2015	7/23/2020
Mid Concentration	10.01	9.94	187.5	89.88	25.57	10.01	187.5
High ID	CC349923	CC349923	CC57704	XC001760B	SG9165715	CC349923	CC347170
High Expiration	11/9/2014	11/9/2014	2/16/2014	11/22/2014	3/9/2013	11/9/2014	2/17/2013
High Concentration	21.97	17.69	452.6	193.6	47.19	21.97	452.3
<u>Calibration Error</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.11	0.21	0.58	-0.25	-0.55	0.12	0.04
Zero Error (%)	0.5	1.17	0.13	-0.13	-1.16	0.54	0.01
Low Response	0	0	92.61				
Low Error (%)	0	0	0.63				
Mid Response	10.07	10.2	189.02	90.56	24.75	10.08	188.28
Mid Error (%)	0.29	1.47	0.34	0.35	-1.74	0.3	0.17
High Response	22.03	17.81	454.03	195.97	46.55	21.96	451.13
High Error (%)	0.29	0.69	0.32	1.22	-1.36	-0.04	-0.26
<u>Initial Bias</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.27	0.17	0.07	0.48	0.29	0.31	0.71
Zero Bias (%)	0.74	-0.22	-0.11	0.38	1.78	0.87	0.15
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.06	10.02	91.25	86.95	24.52	10.15	185.94
Span Bias (%)	-0.06	-1.04	-0.3	-1.87	-0.48	0.34	-0.52
<u>Final Bias &amp; Drift</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Zero Response	0.25	0.14	0.14	0.03	-0.38	0.37	-0.99
Zero Bias (%)	0.64	-0.38	-0.1	0.14	0.36	1.14	-0.23
Zero Drift (%)	-0.1	-0.16	0.02	-0.23	-1.41	0.27	-0.38
Span Concentration	10.01	9.94	89.75	89.88	25.57	10.01	187.5
Span Response	10.11	10.03	91.17	86.66	24.55	10.07	186.16
Span Bias (%)	0.17	-0.97	-0.32	-2.01	-0.42	-0.03	-0.47
Span Drift (%)	0.24	0.07	-0.02	-0.15	0.06	-0.36	0.05
<u>Results</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
Corrected Averages	10.78 ✓	8.79	82.79	83.1 ✓	3.08	10.69	55.69
<u>Log Averages</u>	O2 (%) Outlet	CO2 (%) Outlet	NOx (ppm) Outlet	CO (ppm) Outlet	SO2 (ppm) Outlet	O2 (%) Inlet	SO2 (ppm) Inlet
21Feb2013 - 12:24:03	10.12	8.92	85.06	68.52	0.58	8.86	46.7
21Feb2013 - 12:25:03	11.06	8.62	90.71	71.81	0.46	9.19	59.55
21Feb2013 - 12:26:03	11.16	8.57	90.99	24.54	0.21	8.99	59.66
21Feb2013 - 12:27:03	11.27	8.55	95.89	19.78	0.18	9.26	59.09
21Feb2013 - 12:28:03	10.62	9.07	90.16	20.31	0.1	8.43	61.05
21Feb2013 - 12:29:03	10.66	9.13	86.13	56.32	0.28	8.47	66.64
21Feb2013 - 12:30:03	10.86	8.89	86.72	68.37	0.29	8.73	67.59
21Feb2013 - 12:31:03	10.61	9.18	69.88	87.67	0.32	8.68	68.04
21Feb2013 - 12:32:03	10.28	9.41	67.57	245.23	0.25	8.26	68.5
21Feb2013 - 12:33:03	9.81	9.8	62.15	278.63	0.43	7.84	73.19
21Feb2013 - 12:34:03	10.01	9.63	64.95	431.9	0.87	7.54	78.13
21Feb2013 - 12:35:03	11.02	8.72	89.65	141.85	1.23	8.52	76.12
21Feb2013 - 12:36:03	11.31	8.53	92.02	17.17	3.48	9.41	66.72
21Feb2013 - 12:37:03	10.94	8.82	79.52	16.47	5.52	9.23	61.84
21Feb2013 - 12:38:03	10.42	9.36	79.87	25.42	7.66	8.51	65.73
21Feb2013 - 12:39:03	10.86	8.93	89.39	19.24	8.83	8.77	70.97
21Feb2013 - 12:40:03	11.18	8.57	95.16	8.02	9.46	9.11	68.53
21Feb2013 - 12:41:03	11.38	8.46	90.96	7.29	9.79	15.99	42.58
21Feb2013 - 12:42:03	11.36	8.44	84.8	9.63	7.14	20.79	-0.57
21Feb2013 - 12:43:03	11.15	8.58	88.75	15.89	2.82	20.85	-0.81
21Feb2013 - 12:44:03	11.57	8.24	86.75	51.57	1.34	20.84	-0.96
Average	10.84	8.88	84.15	80.27	2.92	10.77	55.16